THE IRON TRADE REVIEW

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Heavy Basic Inquiry Appears at Pittsburg

Following Sales at Low Prices — Demand for Foundry Grades Also Improves — Numerous Structural Contracts Awarded

Owing to the improved demand for finished materials, mills have been resuming rapidly since the Fourth-of-July shut down, especially those of the Steel Corporation, whose business is assisted to a greater extent than that of the independents by foreign demand.

Pig Iron

Following sales of about 20,000 tons of basic in the Mahoning valley at the very low prices of $12.65 to $12.75, furnace, heavy inquiries have appeared, amounting to nearly 75,000 tons, and some tonnage has been disposed of at slightly better than $13, valley. The Republic Iron & Steel Co., which recently completed its new open-hearth plant, is calling for a large tonnage. The Colonial Steel Co. is also in the market. An eastern Pennsylvania consumer of basic has purchased 7,500 tons at $15.00, delivered, and another eastern buyer has taken 5,000 tons. Inquiry for foundry grades has also improved in the Pittsburg district, where the Westinghouse Electric & Mfg. Co. is inquiring for a round tonnage for the last four months of this year and first four months of next year. Sellers in the Buffalo district are not quite so eager for business and prices are firmer, with some interests asking from 25 to 50 cents more than last week.

Railroad Buying

The Erie railroad has postponed until July 20 the taking of bids on 3,800 cars. Another railroad is expected to send out an inquiry of from 4,000 to 5,000 tons at an early date. Structural contracts awarded by railroads include 1,200 tons for a pier for the Delaware, Lackawanna & Western railroad. The Pennsylvania Steel Co. has taken bridge contracts, including 2,800 tons for the Minneapolis, St. Paul & Soo Line; 1,200 tons for the Delaware & Hudson; 1,000 tons for the Boston & Albany. The American Bridge Co. has taken 1,400 tons for a bridge at Rotterdam, N. Y., to be erected by the Boston & Maine. The King Bridge Co. has taken 1,300 tons for a Southern Pacific bridge at San Pedro, Cal.

Structural Material

Contracts placed for structural material in Chicago last week exceeded 20,000 tons, while those placed in New York during the past two weeks amounted to about 30,000 tons, not including contracts for subway work, the execution of which is delayed, owing to some question as to the bond issue. The Jones & Laughlin Steel Co. has been awarded 3,300 tons for the Adams Express Co. building, New York; the Thompson-Starrett Co. has a 12-story bank building at Johnstown, Pa., for which the contract for the plain material has not been awarded; the Radley Steel Construction Co. will fabricate 1,000 tons for a building at Thirty-second street and Madison avenue, New York; the Vierling Steel Works will fabricate 6,800 tons for the Rand-McNally building, Chicago; the American Bridge Co. has 2,035 tons for the Masonic building, San Francisco, and 1,600 tons for the Riggs hotel and theater, Washington. Milliken Bros. will erect the court house at Portland, Ore., 1,470 tons. Shipbuilding in the east presents a much more encouraging outlook than for a long time.

Plates and Pipe

The Carnegie Steel Co. has been awarded 4,500 tons for the Los Angeles viaduct, and is understood to have received a contract for 4,000 tons of armor plate for Italian battleships. The city of Cleveland has awarded 3,600 tons of cast iron pipe to the leading interest, which is also expected to take 11,000 tons, soon to be awarded by Detroit.

Sheets

Some large contracts for sheets for third and fourth quarter shipment have been made, and other buyers are showing a disposition to cover for their requirements. The mills are still anxious for orders, but quotations are being pretty well maintained, except that valley mills are quoting at their plants instead of at Pittsburg. Specifications on tin plate contracts are coming in rather freely, but there is not much new business. The warm weather has interfered, to a considerable extent, with the operation of sheet and tin plate mills.

Crude Steel

The market for semi-finished material is making a favorable showing in specifications. One large company will not be able to take care of its specifications for this week. The Republic Iron & Steel Co. will have all of its open-hearth furnaces in operation at an early date.

Coke and Scrap

Owing to the large number of furnaces out of blast, consumption of coke has not been as heavy, and the market is quiet. Foundry coke is dull and weak. The embargo against the shipment of heavy melting steel to consumers in the Pittsburg district has, with one or two exceptions, been lifted. The government is calling for bids on from 75,000 to 100,000 tons of Panama scrap, resulting from the operations of the French in attempting to build the canal.

WORLD'S IRON MARKETS

PITTSBURG

Heavy Inquiry for Basic—Large Tonnage of Sheet Bookings.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., July 11.

Activity in the local iron trade has extended to the pig iron market and inquiries for basic are heavier than at any time in more than 18 months, between 60,000 and 75,000 tons being under active negotiation. Heavy tonnage of basic has changed hands recently, but these transactions were handled quietly and details are being withheld. Some of the larger consumers of foundry grades, including the Westinghouse Electric & Mfg. Co., are negotiating for their forward requirements. An advance in the price of certain grades of pig iron would not be unexpected.

New business and specifications against contracts for finished materials showed further improvement during the first 10 days of July, despite the fact that this is regarded as one of the dullest months of the year for the steel industry. One large company reports that actual bookings last week exceeded shipments by several thousand tons. On account of the increased bookings, the usual mid-summer idleness of finished mills was of short duration, most of the mills which closed down June 30 having resumed operation. The feeling is now pretty general that there will be a gradual increase in buying in all lines and that the industry will make an excellent showing during the third quarter, as compared with the first and second quarters of this year. The American Sheet & Tin Plate Co.'s bookings of sheets in June exceeded those of any corresponding period in the history of the company, and were heavier than for any single month since March, 1910. The extremely warm weather has interfered with the operating schedule of sheet and tin mills. Moderately heavy buying of steel bars continues, although further evidence of price concessions on particularly desirable business for immediate shipment is noted. The Carnegie Steel Co. has received a contract for 4,500 tons of plates for the Los Angeles, Cal., aqueduct. Bids have closed on the inquiry of the Erie railroad for 3,800 freight cars, and awards likely will be made in a few days. Several other roads are figuring on new equipment and pending car inquiries involve from 12,000 to 15,000 cars. There is more activity in the structural steel market, but low prices have been quoted on new work which has appeared during the past week or so. Specifications for billets and sheet bars are heavier than for some months. Two or three companies are operating their steel mills to capacity this week.

Pig Iron.—There is a larger tonnage of pig iron under active negotiation in this market than at any time in more than 18 months and, as several large consumers will be obliged to cover for at least part of their requirements, indications point to at least a moderate buying movement. During the past two or three days, inquiries have appeared for from 60,000 to 75,000 tons of basic pig iron. In addition, the Westinghouse Electric & Mfg. Co. has entered the market for a round tonnage of iron for the last four months of this year and the first four months of 1912, and is expected to buy from 7,000 to 10,000 tons of foundry iron. A local steel car company has practically closed on a round tonnage of malleable and car wheel iron. Several other consumers are quietly negotiating for their early requirements. The inquiries for basic noted above include one for from 25,000 to 30,000 tons from a company which heretofore has not been a regular buyer of this grade. The Colonial Steel Co. is also taking bids on from 6,000 to 7,000 tons of basic. The remainder of the tonnage is for shipment to plants in what is known as the Greater Pittsburg district. The heavy inquiry for basic is due chiefly to the blowing out of a number of merchant furnaces; reports of sales aggregating 20,000 tons in June at from $12.65 to $12.75, valley; the starting of new steel works, and the fact that, on account of the unsettled condition of the market, consumers generally have been buying in small lots for immediate shipment. The basic situation is attracting a great deal of attention and developments during next week likely will be interesting. An advance in prices would not be unexpected. Several sales of Bessemer have been made during the past two or three weeks, but names of buyers and the price paid are withheld. A local interest recently asked for bids on 4,000 to 6,000 tons, but this business has not been placed. Furnace interests continue to ask $15, valley. Most consumers of foundry grades continue to buy in small lots for early shipment. Comparatively little malleable and gray forge iron has changed hands. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	12.75
Basic, Pittsburg	13.65
No. 2 foundry, Pittsburg	14.40
Gray forge, Pittsburg	13.90
Malleable, Pittsburg	14.15

(Third Quarter.)

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	13.00
Basic, Pittsburg	13.90
No. 2 foundry, Pittsburg	14.40
Gray forge, Pittsburg	13.90
Malleable, Pittsburg	14.15

Ferro-Alloys.—There has been no important trading in ferro-alloys and there is little inquiry for ferro-manganese and 50 per cent ferro-silicon pending in this territory. Prices are irregular.

We quote ferro-manganese at $36.50 to $36.75, Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburg is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $52.75 to $53.75, Pittsburg, for prompt and forward delivery; 12 per cent, $25; 11 per cent, $24; 10 per cent, $23, f. o. b. Jisco and Ashland furnaces. The freight rate to Pittsburg is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Interest in this market is centered chiefly in the more general inquiry for freight cars. Bids closed Saturday on the 3,800 freight cars for the Erie Railroad Co. and awards likely will be made within a few days. Other roads are figuring on additional equipment and it is conservatively estimated that from 12,000 to 15,000 freight cars are involved in pending inquiries. One large trunk line is expected to put out an inquiry for from 4,000 to 5,000 cars in the very near future. The largest order for plates placed in this territory during the week was for 4,500 tons for the Los Angeles, Cal., aqueduct, awarded to the Carnegie Steel Co. This company is also understood to have re-

ceived an order for about 4,000 tons of armor plate for the Italian government battleships. Specifications against contracts for plates are slightly heavier than a month ago, and the tone of the market is much firmer. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.35c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Some large contracts for sheets for third and fourth quarter shipment have been placed since July 1, by the consuming trade and the indications are that bookings in July will be heavy for this season of the year. Stocks in manufacturers' hands have been materially reduced during the past four or five weeks. A number of additional mills have been started and the Youngstown Sheet & Tube Co. and a few other independents are operating full time, but the extremely warm weather has greatly interfered with mill operations. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburg district:

Blue annealed sheets No. 10 gage 1.50c; black annealed sheets No. 28 gage 2c; galvanized sheets No. 28 gage 3c; painted roofing sheets 1.40c per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets 2.55c per square for No. 28 gage, 2½-inch corrugation, f. o. b. Pittsburg.

Tin Plate.—Users of tin plate are specifying rather freely and shipments compare favorably with those of corresponding periods in past years. There is not a great deal of new business appearing, as a number of the larger buyers are covered for the remainder of the year. Some companies have been obliged to cut down production on account of the warm weather, but operations are about the same as the latter part of June. We quote the market as follows:

Coke tin plate, 10-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburg district.

Rails and Track Material. — The railroads are specifying liberally against contracts for steel rails. In addition to a fair run of orders for standard steel rails, some of the larger trunk lines are quietly figuring upon their requirements for the remainder of the year and rail manufacturers look for some fairly large awards within the next 3 days. Local mills report fair bookings of light rails during the past week. Several large inquiries for railroad spikes have come out during the past 10 days and one or two roads have recently purchased in the neighborhood of from 4,000 to 5,000 kegs. Recent inquiries for spikes have developed a slightly lower price and the market is quotable at from $1.50 to $1.60, Pittsburg. We quote the market as follows, the base price on open hearth rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; track bolts, 2.25c, Pittsburg.

RAILROAD SPIKES.

4½, 5 and 5½ x $\frac{9}{16}$	$1.50 to $1.60
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x $\frac{7}{16}$	.20
3, 3½, 4 and 4½ x $\frac{3}{8}$	.30
2½ x $\frac{3}{8}$	.40
2½, 3 and 3½ x $\frac{7}{16}$	.60
2 x $\frac{7}{16}$	.80

Steel.—The semi-finished steel market is making a very creditable showing in the way of specifications against contracts for third quarter. From June 1, when prices of billets and sheet bars were reduced $2 a ton, until July 1, users reduced their stocks to a minimum, although the general demand in June was heavy. Since July 1, specifications have been very heavy, as consumption has been heavy and users are increasing their stocks at the present low prices. With a few exceptions, most users are covered by contract for the next two or three months. Some companies are operating their steel mills to capacity and one large interest reports that it will not be able to take care of all its specifications for this week. The Republic Iron & Steel Co. is expected to have all its new open-hearth furnaces in service shortly. A few small lots of forging billets have been sold this week at $26, Pittsburg. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $21, with the usual extras for size and analysis, and open-hearth rolling billets, $21. Bessemer sheet and tin bars are quoted at $22, and open-hearth sheet bars are quoted at $22, f. o. b. Pittsburg or Youngstown, with full freight to destination added. Forging billets are quoted at $26, Pittsburg.

Hoops and Bands.—Local mills are receiving liberal specifications for hoops and prices are fairly firm. Demand for bands is not heavy and price concessions have been made on particularly desirable orders for immediate shipment. We quote the market as follows:

Hoops in carload lots, 1.40c, Pittsburg; in less than carload lots, 1.50c; bands, 1.25c base, with net extras, as per standard steel.

Merchant Bars.—There is a fair amount of steel bar tonnage coming out and some companies have about all the business they can handle over the next few months. A few mills, however, have comparatively little business on their books and scattered orders for immediate shipment have been placed on a basis of 1.20c, Pittsburg, which is $1 a ton under the card, which became effective June 1. All mills are quoting strictly on a 1.25c, Pittsburg, basis on forward delivery business. Some mills will not quote below 1.30c, Youngstown, on bar iron; but sales have also been made at 1.30c, Pittsburg. Bar mills employing union labor have signed the wage scales for the year beginning July 1, and operations have been resumed at the majority of the plants. There is slightly more activity in the market on shafting, although no large orders have been placed. We quote the market as follows:

Common iron bars, 1.30c, Pittsburg; Bessemer and open-hearth steel bars, 1.25c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3-inch, 1.35c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 per cent off in carloads and 55 per cent in less than carloads, delivered in base territory.

Muck Bar.—There is little inquiry for muck bar pending in this market. One or two companies are reported to have bought from 100 to 400-ton lots for early shipment at about $28.50, Pittsburg, but some sellers will not quote this low. We quote the best grades of muck bar at from $28.50 to $29, Pittsburg.

Structural.—A large amount of structural work has been placed during the past two weeks, although individual orders have not been very large. The Thompson-Starrett Co. has a contract for a 12-story bank building at Johnstown, Pa. The contract for steel has not yet been awarded, but probably will go to the Cambria Steel Co. The Jones & Laughlin Steel Co. has contracts for 3,000 tons of steel for the Adams Express Co. building, New York City, and 800 tons for the Virginia Life Insurance building, at Richmond. The Fort Pitt Bridge Co. has a contract for the Delaware, Lackawanna & Western pier at Hoboken, N. J., involving 1,200 tons and

200 tons for the Boston elevated power house at Boston. The city of Pittsburg has asked for bids on two small bridges, which will require several hundred tons of steel, and is expected to ask for bids in a few days on the bridge across the Allegheny river, which will involve from 9,000 to 10,000 tons. Some extremely low prices have been quoted during the past few days. We quote the market as follows:

Beams and channels, 15 inches and under, 1.35c; over 15 inches, 1.45c; zees, 1.35c; tees, 1.40c; angles, from 3 to 6 inches, 1.35c; over 6 inches, 1.45c; universal and sheared plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe.—This market is rather quiet. A large amount of line pipe will be required in proposed new projects being figured upon, but buyers are slow to close. A local gas interest has practically closed on its inquiry for 25 to 30 miles of 16-inch steel line pipe, noted recently, the business going to a local mill. A western interest has asked for bids on 15 to 20 miles of 4-inch steel line pipe and is expected to enter the market shortly for about 60 miles of 12-inch steel line pipe. Demand for merchant iron and steel pipe is only fair. Some contracts with jobbers have been extended to cover the next 60 days. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
		Butt weld.		
	Black.	Galv.	Black.	Galv.
⅛, ¼, ⅜ inch.....	72	58	68	54
½ inch	75	63	71	59
¾ to 1½ inch.....	79	69	75	65
2 to 3 inches	80	70	76	66
		Lap weld.		
2 inches	76	66	72	62
2½ to 4 inches	78	68	74	64
4½ to 6 inches.....	77	67	73	63
7 to 12 inches.....	75	59	71	55
EXTRA STRONG, PLAIN ENDS.				
		Butt weld.		
⅛, ¼, ⅜ inch	69	59	65	55
½ inch	74	68	70	64
¾ to 1½ inch	78	72	74	68
2 to 3 inches.....	79	73	75	69
EXTRA STRONG, PLAIN ENDS.				
		Lap weld.		
2 inches	75	69	71	65
2½ to 4 inches.....	77	71	73	67
4½ to 6 inches.....	76	70	72	66
7 to 8 inches.....	69	59	65	55
9 to 12 inches.....	64	54	60	50
DOUBLE EXTRA STRONG, PLAIN ENDS.				
		Butt weld.		
½ inch	64	58	60	54
¾ to 1½ inch.....	67	61	63	57
2 to 3 inches	69	63	65	59
DOUBLE EXTRA STRONG, PLAIN ENDS.				
		Lap weld.		
2 inches	65	59	61	55
2½ to 4 inches.....	67	61	63	57
4½ to 6 inches.....	66	60	62	56
7 to 8 inches	59	49	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes.—Conditions surrounding the market on merchant and locomotive boiler tubes are not satisfactory. Orders are extremely light and considerable irregularity in prices is noted. We quote the following discounts on steel boiler tubes in carload lots to jobbers:

1¼ to 2¼ inch.....	65
2½ inch	67½
2¾ to 3¼ inch	70
3½ to 4½ inch.....	72½
5 and 6 inch	65
7 to 13 inch	62½

To destination east of the Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg. Usual extras to jobbers and boiler manufacturers.

Wire Products.—There has been a fair run of orders for wire products for third quarter delivery since prices were reduced $2 a ton. In several instances, buyers have endeavored to cover for their full requirements up to Jan. 1, 1912, at today's prices, but the larger mills are limiting contracts to 60 days. In addition to the orders placed by the consuming trade, heavier specifications have been received from jobbers. The market on cut nails has not been thoroughly tested, but western mills continue to quote $1.60, Pittsburg. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.80; retailers' carload lots, $1.85; cut nails (western makers), jobbers' carload lots, $1.60; painted barb wire, jobbers' carload lots, $1.80; retailers' carload lots, $1.90, with 30c for galvanizing; plain wire to jobbers in carloads, $1.60, and to dealers, in carloads, $1.65; polished staples, $1.80; galvanized staples, $2.10.

Wire Rods.—A few users of wire rods who are not covered by contract have purchased from 100 to 500 ton lots for shipment in June, July and August on a basis of $27, Pittsburg. The lower prices announced recently have also brought out slightly more inquiry for forward delivery. We quote $27, Pittsburg, on Bessemer and open-hearth rods.

Coke.—The coke market has been rather quiet during the past week. Most of the larger furnace interests are covered for third quarter requirements, and, on account of the large number of furnaces out of blast, consumption has not been very heavy. Early last week prompt furnace coke was proffered at low prices, but the market at present is firmer and some sellers will not quote below $1.50, ovens, for July shipment, although sales have been made below this figure. The market on foundry coke is dull and weak and some low prices have been made on last half coke. The total production in the Connellsville region during the second quarter of 1911 was 3,784,349 tons, compared with 5,318,245 tons during the corresponding period in 1910 and 3,451,239 tons in the second quarter of 1909. We quote Connellsville furnace coke for prompt shipment at from $1.40 to $1.50, ovens, and for second half at from $1.60 to $1.70, ovens. On high grade Connellsville foundry coke, we quote from $1.80 to $1.90, ovens, for prompt shipment; and from $2 to $2.40, ovens, for second half delivery. The Connellsville *Courier's* figures for the week ending July 1 show 23,876 active ovens with an output of 275,950 tons, as compared with 23,616 active ovens and a production of 273,422 tons the previous week.

Old Material.—The embargo against shipments of heavy melting steel to practically all consumers in the immediate Pittsburg district has been lifted. With the exception of one plant down the Ohio river, practically all mills are again taking shipments against contracts previously made and the market as a whole is firmer than for two or three weeks. Dealers are increasing their stocks and are offering slightly higher prices than a week ago, particularly on bundled sheet scrap. Some dealers are holding this grade at $11, delivered, Pittsburg. A few sales of heavy melting steel of about 1,000 tons each at $13, delivered, are noted. Some sellers will not quote below $13.25, delivered. Bids closed today on the Pennsylvania Railroad Co.'s list of 15,000 tons. We quote, gross tons, delivered in the Pittsburg district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee as follows:

Heavy melting scrap	$13.00 to 13.25
Rerolling rails	13.50 to 14.00
Bundled sheet scrap	11.00 to 11.50
Iron axles	23.50 to 24.00
Old iron rails	15.50 to 16.00
Stove plate	10.50 to 10.75
No. 1 wrought scrap	13.50 to 14.00
Old car wheels	12.75 to 13.00
Low phosphorus	16.50 to 17.00
Machine shop turnings	9.00 to 9.25
Cast borings	8.75 to 9.00
No. 1 cast scrap	13.00 to 13.50
Malleable	13.00 to 13.50

CHICAGO

Structural Contracts Involve Large Tonnage.—Pig Iron Inquiry Heavy.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, July 11.

Aside from a sharp increase in the volume of fabricating contracts, the market in the central west has shown very little change since the first of the month. Over 20,000 tons of plain material will be required for structural contracts let in this market last week. This is the largest tonnage that has been reported in any single week for over two months. The Rand-McNally building, Chicago, 6,865 tons, has been let to the Vierling Steel Works and the Pennsylvania Steel Co. has taken 2,855 tons of

bridge work from the Soo Line. The local rail market is quiet. A number of small miscellaneous car inquiries have appeared in the west recently. In spite of the holiday on July 4, the sheet business has maintained a steady pace and the tonnage booked so far this month is very encouraging to the manufacturers.

Pig Iron.—Inquiry is heavy and although buyers are a little slow in closing, enough business has been placed during the last few days to make a respectable total. An Illinois foundry has purchased 2,000 tons of Southern No. 2 for delivery throughout the last half. An Indiana melter has purchased 1,000 tons of southern iron. A manufacturer of foundry equipment at Harvey, Ill., bought 500 tons of southern No. 2 recently and we also note sales of two additional 500-ton lots to Illinois foundries. The Allis-Chalmers Co., Milwaukee, is known to have purchased a heavy tonnage of foundry iron, but details have not been disclosed. The price of southern iron is being fairly well maintained on a basis of $10.00, Birmingham, for the third quarter and $10.25 for delivery throughout the year. The northern iron situation appears to be clearing slowly. Out of a total of 11 merchant furnaces in this territory, only four are in blast at present, namely, two at South Chicago; one at Milwaukee and one at Duluth. There is no question that melters in this district are shipping iron at the present time faster than they are making it. Among the inquiries for southern iron which have appeared recently is one for from 1,500 to 2,000 tons from a Kalamazoo, Mich., foundry and another for 1,800 tons from an Illinois manufacturer. A Chicago foundry is in the market for 500 tons of southern iron and a Dubuque, Ia., concern has recently issued an inquiry for 400 tons.

The following prices represent the market for Chicago delivery, except Northern foundry No. 2 and malleable Bessemer, which are quoted, f. o. b. furnace:

(Shipment this year.)

Lake Superior charcoal	$17.00
Northern foundry No. 2	15.00
Southern foundry No. 2	14.60
Southern silveries, 5 per cent silicon	16.35
Jackson Co. silveries, 8 per cent	18.40
Malleable Bessemer	14.00
Alabama basic	14.60

Billets.—There is a moderate inquiry for forging billets, although business closed so far this month has been light. We continue to quote f. o. b. Chicago, as follows: Open-hearth forging billets, $27.50, and rerolling billets, $23.60.

Merchant Bars.—Most of the bar iron mills in this territory have resumed and on account of the shutdown are a little crowded with business at present, although orders received during the past week, due partially to the holiday, were light. There is more inquiry from railroads for bar iron. Specifications for steel bars are good and the market is now very firm at 1.25c, Pittsburg. The contracting season for steel bars among the agricultural implement makers is practically over. Store business in merchant steel is good. Inquiry for shafting is moderate.

We quote, Chicago delivery, as follows:

Bar iron, 1.20c to 1.25c; hard steel bars, rerolled, 1.22½c to 1.30c; soft steel bars and bands and small shapes, 1.43c to 1.48c, base; hoops, 1.63c to 1.68c; smooth finished machinery steel, 1 inch and larger, 1.83c. Shafting 60 per cent off list for carload lots, 55 per cent off for less.

On iron and steel from local stock we quote, as follows:

Bar iron, 1.80c to 1.90c per pound base; soft steel bars, 1.65c to 1.75c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—Structural mills are operating at a good gait and the market in the west is in a healthy condition. Fabricating contracts show a sharp increase and 20,615 tons of plain material will be required for those reported let in this market last week. This is the largest tonnage which has been reported during any single week for a couple of months. The new Rand-McNally building, Chicago, 6,865 tons, will be fabricated by the Vierling Steel Works. The American Bridge Co. has taken 2,035 tons for the Masonic Temple, San Francisco, and 295 tons for a rock storage trestle from the Pacific Portland Cement Co., Cement, Cal. Considerable railroad business was also placed last week, including 2,855 tons of bridge work which the Pennsylvania Steel Co. obtained from the Minneapolis, St. Paul & Sault Ste. Marie Ry. Co., 400 tons for deck plate girder spans near Sherman, Ill., on the Chicago & Alton, let to the Toledo Bridge & Crane Co., and 1,310 tons let by the Southern Pacific to the King Bridge Co. for a bascule bridge near San Pedro, Cal. A bridge across the Skagit river near Mt. Vernon, Wash., will require 115 tons. Other structural contracts let last week include the following: Multomah county court house, Portland, Ore., 1,470 tons, to Milliken Bros.; Boston Store, Milwaukee, Wis., 335 tons, to Heil & Co., Milwaukee; Pantages theatre, San Francisco, Cal., 300 tons, to Central Iron Works; pole fixtures for Olympic Power Co., Port Angeles, Wash., 120 tons, to the Hubbard Co.; Tonopah-Belmont Development Co., tanks and mill buildings, Tonopah, Nevada, 1,100 tons, to the Worden-Allen Co., and the Van Nuys building, Los Angeles, Cal., 3,435 tons, to the Llewellyn Iron Works.

We quote, structural material, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.53c. For extras, see Pittsburg report.

Plain material out of store is as follows:

All angles, 3 inches and larger, including 6 inches, $1.75 to $1.85 per 100 pounds; angles over 6 inches, $1.85 to $1.90 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.75 per 100 pounds, base; channels, 3 inches and larger, $1.75 per 100 pounds, base.

Rails and Track Fastenings.—Specifications for standard rails are moderate, but little new business was placed last week, largely on account of the holiday. Specifications for track fastenings are good, but prices have not changed any and spikes are still quoted 1.70c, Joliet, and bolts 2.10c, Joliet.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.65c to 1.75c; smaller size spikes, 1.70c, base; track bolts with square nuts, 2.10c to 2.20c, base.

Plates.—There has been very little change in the plate situation in the west during the past week. Local mills were closed from July 1 to 5. The Louisville & Nashville has ordered 1,000 underframes, 250 of which will be fabricated by the Bettendorf Axle Co., and 250 by the Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill., the balance being awarded to the Pressed Steel Car Co. The Ann Arbor railroad is in the market for 450 freight cars and the Missouri Pacific is sending out inquiries for 50 passenger coaches. In addition to the above, the Chicago & Eastern Illinois expects in a short time to buy 35 all-steel, 70-foot passenger cars.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.53c. For extras, see Pittsburg report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.75c to 1.85c.

Sheets.—In spite of the holiday, the sheet business has maintained a steady pace and the tonnage booked so far this month is very encouraging to the manufacturers. Aside from the fact

that some Ohio mills are quoting f. o. b. mill, there is practically no shading in the market.

For mill prices, see Pittsburg report. Freight to Chicago, 18 cents.

We quote, store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2c; No. 12, 2.05c. Box annealed, No. 28, 2.65c. Galvanized, No. 28, 3.55c.

Wire Products.—Not much is expected of the wire business during the mid-summer and orders are light. Specifications against contracts which have been readjusted to the new basis established by the recent reduction of $2.00 a ton, show no improvement. There is not as much activity in the wire market as in other branches of the trade.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers', less than carload lots, $2.03, with 30c for galvanizing; plain wire to jobbers, $1.68; plain wire, retailers' carload lots, $1.73; staples, bright, $1.88.

Merchant Pipe and Tubes.—Routine orders for merchant pipe are moderately good. Contracts for boiler and merchant tubes, which expired June 30, have been generally extended to cover the third quarter. Shipments against existing contracts are light and prices are somewhat ragged.

We quote, merchant pipe and tubes, out of store, as follows:

Iron and Steel Pipe Basing Prices.

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛-⅜ inch	69.2	54.2	63.2	48.2
½ inch	72.2	59.2	66.2	53.2
2 in. to 3 in.	77.2	66.2	72.2	61.2
4½-6 inches	74.2	63.2	69.2	58.2
7-12 inches	71.2	54.2	67.2	50.2
Extra Strong Plain Ends.				
⅛ inch	70.2	63.2	54.2	52.2
2-3 inches	75.2	68.2	61.2	55.2
7-8 inches	65.2	....	59.2	47.2
Double Extra Strong.				
½ inch	58.2	50.2	....	....
2-3 inches	63.2	55.2	....	....
7-8 inches	53.2	41.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	39	..	57½
1¼ to 2½ inch	55	40	35
2¾ to 3¼ inch	62½	50	46

Cast Iron Pipe.—On account of the holiday there were no important lettings in the cast iron pipe market last week. The United States Cast Iron Pipe & Foundry Co. has been awarded 300 tons of water pipe at Los Angeles and the Lynchburg Foundry Co. obtained 125 tons from the same source. Local contractors have been awarded 400 tons at Homeward, Ill., and also have taken 200 tons at Milan, Mo.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $25.25; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—While prices have not changed to any extent, the market is a little weaker than it was on the first of the month. This is due somewhat to the fact that most of the scrap consuming mills were shut down last week, thus further curtailing the demand and causing additional pressure on the market. Dealers are generally anxious to sell, and are not holding out for prices as strongly as they were a short time ago. Unless bar iron improves in price, there may be some further reductions in quotations on scrap in this market.

We quote the market for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.

Old car wheels	$12.75 to 13.25
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.25 to 12.75
Old steel rails (3 ft. and under)	11.25 to 11.75
Frogs, switches and guards	10.25 to 10.75
Heavy melting steel	10.25 to 10.75
Shoveling steel	9.90 to 10.40

NET TONS.

No. 1 R. R. wrought	$11.00 to 11.50
No. 2 R. R. wrought	10.00 to 10.50
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.00 to 10.50
Shafting	15.00 to 15.50
Iron car axles	17.75 to 18.25
Steel car axles	16.00 to 16.50
Locomotive tires	16.00 to 17.00
Dealers' forge	10.00 to 11.00
Pipes and flues	8.00 to 8.50
No. 1 cast	10.75 to 11.25
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.75 to 7.25
No. 1 boiler cut	7.50 to 8.00
Boiler punchings	12.50 to 13.00
Cast and mixed borings	5.25 to 5.75
Machine shop turnings	6.25 to 6.75
Railroad malleable	10.00 to 10.50

Westinghouse Inquiry Brings New Life to Pig Iron Market.

Office of THE IRON TRADE REVIEW, Penton Building, July 11.

Iron Ore. — The complacency of blast furnace owners in regard to providing for their iron ore requirements continues to surprise ore agents. Every day that passes without anything being done adds to the probability that there will be a lively period at the end of the season.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The appearance of the Westinghouse inquiry has brought new life to the Cleveland market, and much interest is manifested as to what tonnage will probably be placed and what the price will be. Cleveland sellers are also much interested in the recent low prices made in basic and likewise in the increase in inquiry for that grade. We quote, delivered in Cleveland, as follows for the remainder of the year.

No. 1 foundry	$14.50
No. 2 foundry	14.25
No. 2 southern	14.35
Gray forge	13.25
Bessemer	15.90
Lake Superior charcoal	17.50
Jackson Co. 8 per cent silvery	18.00

Coke. — Temporary activity having spent its force, the market has become very dull, but prices are well maintained. We quote:

Connellsville furnace coke, $1.40 to $1.50 for prompt delivery, and $1.60 to $1.80 for second half, Connellsville foundry coke, $1.80 to $2 for prompt, and $2.15 to $2.35 for second half.

Finished Material.—A large number of small orders are coming to the mills, but buyers are insistent upon having prompt delivery. This is an encouraging sign, but mill agencies would like to see the tonnage increase. No large contracts for structural material are to be placed in the near future. It seems probable that the contract for the new high level bridge across the Cuyahoga river will be awarded about Oct. 15. Numerous contracts for sheets have been made and consumers are showing a disposition to make more contracts. While sheet mills are anxious to take orders, prices are not being shaded except by mills quoting at their plants inside of Pittsburg. The Union and Empire rolling mills are idle, and will probably not resume this month. The city of Cleveland has awarded the contract for 3,600 tons of cast iron pipe to the United States Cast Iron Pipe & Foundry Co.

Old Material.—No change has occurred in the local scrap situation and business is so scarce that prices continue largely nominal. Of the local rolling mills, two are active. One of these rolling steel bars has recently closed for a large tonnage of heavy melting steel at the market price. Dealers are interested in the sales to be made by the Baltimore & Ohio and Norfolk & Western railroads of large lists of scrap. We quote prices per gross tons, f. o. b. Cleveland, as follows:

Old iron rails	$14.00 to 15.00
Old steel rails (under 6 ft.)	12.00 to 13.00
Old steel rails (over 6 ft.)	11.75 to 12.25
Relaying rails	18.00 to 19.00
Old car wheels	12.00 to 12.50
Old steel boiler plate	9.00 to 9.50
Malleable iron (railroad)	11.75 to 12.00
Steel axles	19.00 to 19.50
Axle turnings	8.00 to 8.50
Malleable iron (agricultural)	11.00 to 11.50
Heavy steel	11.50 to 12.00
Country mixed steel	9.00 to 9.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.00 to 12.50

No. 1 busheling	10.00 to 10.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.50 to 11.00
Machine shop turnings	6.00 to 6.50
Pipes and flues	8.00 to 8.50
Wrought drillings	6.50 to 7.00
Stove plate	9.00 to 9.50

Fair Buying of Pig Iron and a Little Better Tone.

Office of THE IRON TRADE REVIEW,
808 Provident Bank Bldg., July 11.

Pig Iron.—A later report shows that but three of the 16 furnaces in southern Ohio are now in blast. Both northern and southern prices are practically unchanged. In southern Michigan, sales of 500 and 1,000 tons of foundry iron have been made for second half shipment. An inquiry for 500 tons of high silicon from the same territory remains unclosed. From 300 to 500 tons of foundry iron were sold to a stove maker in southern Indiana. Another melter from the same district took 300 tons of foundry, while an inquiry for 300 tons is open from a southern Indiana melter. A steel mill interest in southern Ohio closed for a part of its inquiry for basic iron. The Louisville sanitary interest has not yet closed for the remainder of its iron requirements. A large number of small sales of foundry iron averaging from 150 to 300 tons have been sold at $10 and $13 for southern and northern iron, respectively, for delivery over the year. Ten dollars is now pretty generally recognized as the accepted figure for the year for southern No. 2, for 1,000 tons of malleable iron from southern Michigan. Northern basic in this territory is quotable at $13.25 to $13.50, although no activity has developed in this iron recently. Although prices are unchanged, a slightly better tone is apparent in the pig iron market. Based on a freight rate of $3.25, from Birmingham, and $1.20, from Ironton, we quote Cincinnati and southern Ohio, as follows:

Southern foundry No. 2	$13.25
Southern foundry No. 3	12.75
Southern foundry No. 4	12.50
Southern gray forge	12.00
Mottled	12.25
Southern No. 1 soft	14.70
Southern No. 2 soft	14.20
Standard southern car wheel	25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson county 8 per cent silicon	16.95

Coke.—Some reported sales of coke show a price for furnace coke down to $1.40 and $1.50 for prompt shipment, but a fair quotation will hardly go below $1.55 or $1.60, for this year shipments. A sale of Pocahontas coke averaging from 50 to 100 tons per month has been closed with a consumer in this territory for the year's requirements. A majority of the coke fields are reducing the number of ovens in blast considerably, and are awaiting better activity. Prices are being generally maintained at the quotations of the past two weeks. We quote the various producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.50 to 1.65	1.65 to 1.75
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.15	2.00 to 2.35
Furnace coke	1.60 to 1.75	1.75 to 1.85
New river:		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—All classes of finished material are doing a fair business, with specifications against contracts firm and shipments good. No large structural sales are noted and no large structural tonnages are ready to be closed at this time. Bars and plates are active, with a fair movement of reinforcing rods. Bars are firm at 1.25c, Pittsburg mill base, with 1.70c the local warehouse price on steel bars. Structural material at local warehouses holds at about 1.80c.

Old Material.—Burnt scrap is quoted at $7.25 to $8.00, while good number one cast scrap is selling at $10 to $11 for small lots and up to $12.00 and $12.75 for choice quantities. Bundled sheet scrap goes at about $8.00 to $9.00. There is a fair demand for heavy melting steel. Prices for delivery in buyers yards southern Ohio and Cincinnati, are as follows:

GROSS TONS.

Old iron rails, gross	$14.00 to 14.50
Old steel, rerolling, gross	13.00 to 14.00
Old iron axles, gross	19.25 to 19.75
Steel melting scrap, gross	11.00 to 11.75
Car wheels, gross	11.50 to 12.50

NET TONS.

Old No. 1 R. R. wrought	$12.25 to 12.75
No. 1 machinery	10.50 to 11.00
No. 1 busheling	9.25 to 9.75
Stove plate	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Cast borings	5.50 to 6.25
Grate bars	7.25 to 8.00
Sheet scrap, bundled	8.00 to 9.00
No. 1 cast scrap	10.00 to 11.00
Heavy turnings	7.75 to 8.75

Upon the application of Joseph R. Greenwood of New York, Judge J. Kearney Rice of New Brunswick, N. J., has been appointed receiver of the Ball & Wood Co., Elizabeth, N. J., manufacturer of stationary engines, by the United States district court at Trenton. The receiver's bond was fixed at $100,000.

Holiday Disturbance Wearing Away—Some Scrap Improvement.

July 10.

The market is freeing itself this week of the retarding influence of the Fourth of July cessation. By this week practically all the eastern steel works have resumed, but some of the iron mills are still down. Makers are awaiting the reappearance of the partial improvement noted before the shut-down. A fairly heavy movement of pig iron is shown by total June sales. Iron mill scrap continues to show improvement.

Pig Iron.—Total pig iron sales in Philadelphia and eastern Pennsylvania districts during June aggregated fully 100,000 tons for third and fourth quarter shipment, a considerable portion of which was of basic. Certain furnace interests, which have been selling more aggressively than others, shared largely of the new business. Minimum prices of today's schedule of quotations applied to much of the June bookings, which were undoubtedly enlarged by the attractive propositions made to buyers. The shipping movement by the furnaces continues of good proportions and stocks in brokers' hands show slight declines. The week has shown some resumption of buying interest by consumers, but the market has not yet rid itself of the holiday influence and the depressingly hot weather has also affected the situation. One eastern steel works which has been sounding the market for a block of basic for third or fourth quarter, is reported to have closed for 5,000 to 10,000 tons, but details are lacking. A Harrisburg consumer of this grade is inquiring for 6,000 tons for delivery in equal lots during July, August and September Basic can still be had at $14.50, delivered in the east, with some makers holding for $14.75, delivered. A pipe maker inquiring for 5,000 tons of No. 3 and forge for September shipment, has bought 2,000 to 3,000 tons of northern off basic at about $14.50, delivered. Some of the pipe makers say they can buy southern forge at $9, Birmingham, or $13.20, delivered, this district, but one of these interests paid $9.25 for a small lot of this grade this week. There is practically no demand for standard mill forge and quotations are nominal. Foundry iron sales continue in small quantities, usually 500 tons or less at prices equivalent to $15 to $15.25, Philadelphia, for eastern Pennsylvania 2X.

Virginia iron is selling at unchanged prices, $12.25 to $12.50, furnace, or $15.05 to $15.25, Philadelphia, for No. 2X. Recent low prices in Virginia territory were made on lots which were considerably outside the regular analysis limits. The Pulaski furnace in Virginia, has blown in. We quote for prompt and third quarter shipment as follows:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 15.00
Standard gray forge	14.25
Basic	14.50 to 14.75
No. 2X Virginia	15.05 to 15.30
No. 2 southern	14.00 to 14.50
Standard low phosphorus	20.50 to 21.00

Finished Material.—Some of the eastern steel mills resumed operations immediately after the Fourth; others did not start up until this week Some of the iron mills are still idle. The week, as a consequence, has been marked by irregularity in selling as well as operations. At this time the market has scarcely resumed in full the movement towards moderate improvement, discernible before the Fourth, but the undertone suggests betterment.

More encouraging reports are coming from the shipbuilding industry along the eastern coast. It is declared on good authority that more new vessels are under consideration than for several years past. One of the suggested influences for such activity is the approaching completion of the Panama canal.

Consumers of semi-finished steel have been more willing to contract for their forward requirements and some last half contracts for forging billets have been closed, including one for 1,500 tons. The sheet trade in the east shows no change, but there is a slight betterment in plates. Bars show some activity. Little is heard this week of the reports of 1.20c, Pittsburg, being offered eastern consumers on steel bars, which were prevalent last week, leading to the inference that such offers have been withdrawn. All the leading makers disclaim tendering such quotations.

Structural work continues to come out in good volume. The Pencoyd plant of the American Bridge Co., in this city, is now operating at the highest gait in several years. The 1,600 tons for the Riggs hotel and theater, Washington, has finally gone to the American Bridge Co.; the Jones & Laughlin Steel Co. has taken 900 tons for the Virginia Life Insurance Co. building at Richmond; the Baltimore Bridge Co. has closed for 900 tons for government wireless towers at Arlington, Va.; the Phoenix Bridge Works has taken 1,400 tons for two bridges for the Boston & Maine railroad, one of them at West Lynn, Mass. Cramp & Co. are low bidders on the readvertised bids for the West Philadelphia high school. No action is announced on the Ritz-Carlton hotel, this city, or the Industrial building, Baltimore, 1,100 tons. A factory for the Adams-Westlake Co., this city, designed for Bethlehem sections, will require about 300 tons. The taking of bids on the C. & O. office building, Richmond, 2,800 tons, has gone over to July 15.

We quote, delivered in Philadelphia and vicinity, as follows:

Structural shapes, 1.50c; steel plates, 1.50c; steel bars, 1.40c; refined bar iron, 1.27c to 1.32c; cut nails, $1.75 to $1.80; blue annealed sheets, No. 10 gage, 1.65c; 4 x 4-inch open-hearth rolling billets, $24.40; forging billets, $28.40.

Coke.—One eastern steel works which has been buying spot furnace coke from time to time, is filling its needs at $1.40, ovens. A Connellsville operator was willing this week to make a $1.45 price without commission on a small lot for immediate shipment. A Schuylkill valley merchant iron maker has bought about 4,000 tons monthly for last half shipment and is still inquiring for a small tonnage. First quality 48-hour Connellsville coke is quoted at $1.40 to $1.45, ovens, for immediate shipment, and $1.50 to $1.60, ovens, on contract. Connellsville 72-hour coke ranges from $1.75 to $2.40, ovens, according to tonnage and delivery.

Old Material.—The better demand for iron mill materials recently noted continues and has brought with it further slight advances in No. 1 railroad wrought, borings, turnings and wrought pipe. Two consumers of wrought pipe have been taking on lots and bidding up the market on one another. One of them this week was offering $12.50 delivered. The brokers are still overbidding the mills on heavy melting steel, paying up to $13.50 delivered, and one small sale of this character was made this week at $13.65 delivered. Regardless of this condition, the mills are still able to pick up occasional lots as low as $13 delivered. The government is selling 1,000 tons of Panama scrap at this port this week.

We quote gross tons delivered in eastern Pennsylvania and New Jersey consuming territory as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	13.75 to 14.25
No. 1 heavy melting steel	13.00 to 13.50
Old car wheels	13.00 to 13.50
Old steel car axles	18.00 to 19.00
Old iron car axles	24.00 to 25.00
No. 1 R. R. wrought	15.50 to 16.00
Wrought pipe	12.50 to 13.00
Cast borings	8.25t o 8.75
Wrought turnings	9.00 to 9.50
Heavy cast scrap	13.00 to 13.50
Railroad malleable	11.50 to 12.00
Stove plate	10.00 to 10.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa., and $1.20 to Harrisburg and Steelton, Pa.

ST. LOUIS

Very Little Inquiry for Pig Iron—Fair Demand for Rails.

July 10.

Pig Iron.—Some local agents and buyers expressed the opinion today that the pig iron situation was at a lower ebb than last week, while others were inclined to be a little optimistic. Inquiries do not total more than 500 tons, and only one sale—100 tons of No. 4 southern foundry—was made the latter part of last week. Southern No. 2 is quoted all the way from $10 to $11, with very little doubt that the lower price could be made. Northern iron is in very little demand, and prices are by no means firm.

Our tabulated prices on southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$14.25 to 14.75
Southern No. 2	13.75 to 14.25
Southern No. 3	13.50 to 14.00
Southern No. 4	13.25 to 13.75

Coke.—Business in coke is virtually at a standstill, with prices unchanged as follows:

We quote 72-hour Connellsville foundry grades, $1.90 to $2.40 for whole of 1911; 72-hour foundry, $1.90 to $2.15 on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.40 to $1.50; best 72-hour Virginia foundry, $2 to $2.25; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—Inquiries are fairly good for structural material, and some small orders have been placed, but there has been no big buying and none is in sight. Orders have been fair for bars, but buyers are holding off for large purchases. Standard rails were in fair demand last week, and there is one inquiry out today for 1,500 tons from a western concern. Light rails are in good demand, and orders have been fair from the coal interests.

Old Material.—Transactions in scrap iron have almost disappeared, and there seems to be no reason to believe that business will pick up in the near future. Prices remain nominally as follows:

Old car wheels	$12.50 to 13.00
Old iron rails	13.50 to 14.00
Rerolling rails (4 ft. and over)	12.00 to 12.50
Old steel rails (2 ft. and under)	11.00 to 11.50
Light section relayers, 45 lb. and under, subject to inspection	19.50 to 22.00
Relaying rails, subject to inspection	24.00 to 24.50

Frogs, switches and guards	11.50 to 12.00
Heavy melting steel	11.50 to 12.00
Shoveling steel	11.00 to 11.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.25
No. 2 R. R. wrought	10.00 to 10.25
Arch bars and transoms	13.25 to 13.50
Knuckles, couplers and springs	12.00 to 12.50
Shafting	14.25 to 14.50
Iron car axles	18.00 to 18.50
Steel car axles	17.00 to 17.50
Locomotive tires	14.00 to 14.50
No. 1 country wrought	9.50 to 10.00
Pipes and flues	8.00 to 8.50
No. 1 busheling	9.25 to 9.50
No. 2 busheling	6.00 to 6.50
Cast and mixed borings	5.00 to 5.50
Machine shop turnings	6.50 to 7.00
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Stove plate	9.00 to 9.50
Angle splice bars, iron	11.75 to 12.25
Angle splice bars, steel	11.00 to 11.50

Good Tonnage Sold, Mostly Foundry Pig Iron.

July 11.

Pig Iron.—The early part of last week was very satisfactory to the local furnaces, although this was followed in the last few days by a falling off both in new inquiries and tonnage booked. The week, however, has been a good one as compared with the records of many weeks past, and the total tonnage sold in the district exceeded that of the week before, amounting to between 10,000 and 12,000 tons. This was mostly foundry iron and made up largely of a few orders ranging from 1,500 up to 3,000 and 4,000 tons. The tonnage under negotiation in this district at the present time is very small, as most of the buyers who have been in the market recently have placed their orders. Shipments are going forward well. Prices continue unchanged although there is a firmer feeling among the furnace representatives. We quote f. o. b. furnace as follows:

No. 1X	$13.25 to 13.75
No. 2X	13.00 to 13.50
No. 2 plain	13.00 to 13.25
No. 3	13.00 to 13.25
Gray forge	13.00 to 13.25
Malleable	13.50 to 13.75
Basic	13.25 to 13.75
Charcoal	16.50 to 17.50

Finished Products.—The coming of the holiday had its usual effect upon business, and consequently specifications for the week have been a little light, and the market has been quiet, showing very little change from last week. No large structural lettings have been reported, but there are a few that will be let in the near future, including 500 tons for the erection of a building at Cornell university, Ithaca, N. Y., and the new 14-story building for the Eastman Kodak Co., Rochester. General lines remain unchanged.

Old Material.—The scrap iron market shows no noticeable change from last week although a few small sales are reported. The prices here given are largely nominal. We quote gross tons f. o. b. Buffalo:

Heavy melting steel	$12.75 to 13.00
No. 1 railroad wrought scrap	14.75 to 15.25
No. 1 railroad and machine cast scrap	14.00 to 14.50
Old steel axles	18.50 to 19.00
Iron axles	23.00 to 24.00
Car wheels	13.75 to 14.25
Railroad malleable, scrap	13.75 to 14.00
Machine shop turnings	7.00 to 7.25
Cast iron borings	6.50 to 6.75
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	16.75 to 17.25
Tank iron	10.75 to 11.25
Sheet iron	6.50 to 7.00
Pipes and flues	10.75 to 11.25
Stove plate	12.00 to 12.50
Grate bars	11.50 to 12.00
Boiler plate	11.50 to 12.00

Some Advances of Minimum Iron Prices—Active Structural Market.

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., July 11.

Iron Ore.—An eastern steel company has closed with lake ore interests for its requirements of high grade ore for use in open-hearth steel making practice. A Lehigh valley furnace has closed for one cargo of Spanish ore, about 5,000 tons, for delivery at New York at 7½ cents per unit of iron f. o. b. tidewater. Beyond such occasional transactions, there is little activity in ore in the east.

Pig Iron.—The eastern market shows less aggressiveness by those interests which have been active as low sellers, and in some instances prices have been moved up 25 to 50 cents. This action has followed the selling a round tonnage of iron by these several makers and as a consequence, is equivalent to their withdrawing from the market. In Buffalo territory, prices have stiffened, so that $13.50, furnace, for No. 2X is now being generally quoted, whereas $13, furnace, was available only a few days ago. A sale of a small lot at Buffalo of foundry iron to a railroad company at the new schedule in competition with other makers from the same district within the past two days, is noted. In eastern Pennsylvania, some fair-sized lots of basic have been sold this week at $15.00, delivered. The market has been quiet since the Fourth and with one or two exceptions business placed or under negotiation this week has been in small lots. One leading eastern buyer continues to negotiate for 5,000 to 10,000 tons of No. 2 plain and No. 3 foundry grades for forward shipment and is expected to take action upon this business within a few days. A New England buyer closed this week for 1,000 tons of malleable for last half and first quarter at $13.50, Buffalo, or $15.95, delivered. The Oxford, N. J., furnace went out of blast this week. We quote for prompt and third quarter shipment as follows:

Northern foundry No. 1	$15.00 to 15.50
No. 2X foundry	14.75 to 15.25
No. 2 plain	14.50 to 14.75
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.00 to 14.50
Malleable	15.00 to 15.25
Gray forge	14.25 to 14.50

Ferro-Alloys.—Some small sales of spiegeleisen have been closed for eastern shipment and this material is now held at about $25, seaboard. About 200 tons of Bessemer ferro-silicon is pending, but apart from this the demand for ferro-alloys is very quiet. We quote 80 per cent ferro-silicon at from $52 to $52.50, Pittsburg.

Cast Iron Pipe.—Some makers continue to enjoy very fair bookings and a good part of this is with regular customers. The board of water supply, this city, has rejected without explanation all bids submitted this week on 2,000 tons of 8 and 12-inch sizes and castings. A new letting for the borough of Queens, about 1,250 tons of 6 to 24-inch and specials, is up for bids Juy 14. Bids went in today on the 11,000 tons for the city of Detroit, which is expected to go to the leading interest. Little New England work is coming out. We quote 6-inch pipe at from $21 to $21.50 f. o. b. New York.

Finished Material.—Business in finished lines is gradually getting back to its position before the holiday. Mill operations have not yet been resumed to the point of before the Fourth, nor is new business being entered as freely as it was two weeks ago. The improved tone of the market is still apparent, but as to increases of actual bookings, it is evident that conditions with the independent interests, especially the eastern mills, are not as promising as with the United States Steel Corporation. The spotted condition of the market's recent improvement is the most striking feature connected with it. One substantial reason for this diversity between the Steel Corporation and the independents is the lack of an active export trade, which many of the latter do not seek.

Probably the most favored branch of the market disclosing a large and sustained tonnage is the structural situation in metropolitan and eastern territory. The New York district is putting out a large amount of loft and apartment house construction and of other miscellaneous lines. Lettings in New York and eastern territory the past two weeks have been approximately 30,000 tons, less than 10,000 tons of which came from the railroads. Fabricated prices are still low and, owing to

the large competing capacity, some of which still shows an evident need of tonnage, the active lettings are having no buoyant effect.

Recent railroad awards include 1,200 tons to the Fort Pitt Bridge Works for the Delaware, Lackawanna & Western pier at Hoboken, N. J., and 500 tons to the same interest for another allotment of the New York terminal work in this city; 1,200 tons for a bridge at Mohawk, N. Y., for the Delaware & Hudson railroad; 1,000 tons for bridges at Worcester, Mass., for the Boston & Albany; 600 tons for a bridge at Glen Onoko, Pa., for the Central of New Jersey railway, and 300 tons for a bridge at Spring City, Pa., for the Pennsylvania railroad, all to the Pennsylvania Steel Co.; 700 tons to the Phoenix Bridge Works for a bridge at West Lynn, Mass., for the Boston & Maine railroad; 1,400 tons to the American Bridge Co. for a bridge at Rotterdam, N. Y., for the Boston & Maine railroad; 500 tons to the Berlin Construction Co. for a power house for the New York, New Haven & Hartford railroad, at Cos Cob, Conn.; about 200 tons to the Fort Pitt Bridge Works for a power house at Boston for the Boston Elevated railroad, and about 200 tons to the Boston Bridge Works for the Dover street station at Boston, for the Boston Elevated railroad. Bids have gone in for a bridge across the Delaware river for the New York, Ontario & Western, 1,000 tons, and for a bridge for the Chesapeake & Ohio railroad, also about 1,000 tons.

In mercantile work, the Jones & Laughlin Steel Co. has taken 3,300 tons for the Adams Express Co. building, this city; the Radley Steel Construction Co. 1,000 tons for a loft at Thirty-second street and Madison avenue; the Hinkle Iron Works 600 tons for a loft in West Forty-second street, and 600 tons for an apartment at Fifty-sixth street and Fifth avenue; the A. E. Norton Co. 700 tons for a store and loft in West Thirty-second street; the Passaic Structural Steel Co. 500 tons for a loft building in West street, near Rector, and 400 tons for an apartment at West End avenue and Sixtieth street; the Lackawanna Bridge Co. 800 tons for the American Radiator Co. warehouse, Bayonne, N. J.; the Hay Foundry & Iron Works 800 tons for the National State Bank building, Newark, N. J.; the American Bridge Co. 500 tons for the Wilkens building, Washington; the Cambria Steel Co. 350 tons for extensions of the power house of the General Electric Co., at Schenectady, N. Y., and Ravitch Bros. have 500 tons for the A. & S. loft up town. Revised plans for the Aeolian building, this city, 4,000 tons, are out, and bids have gone in on 4,000 tons for the Old Dominion Steamship Co. piers at Norfolk, Va. The 700 tons of steel for the St. John's orphan asylum, Utica, N. Y., for which the Oscawanna Building Co., of this city, has the general contract, is up.

Final developments are still awaited in the New York subway extensions. Financial arrangements covering the construction of the five sections of the Broadway-Lexington line, contracts for which were placed this week, are still pending with the board of estimate. Under the most immediate action, it is not likely that the mills will receive the steel for this portion of the work before fall.

We quote, delivered at tidewater, as follows:

Angles, 3 to 6 inches and heavier, 1.51c; tees, 3 x ¼ inch and heavier, 1.51c; plates, carload, tank, 1.51c; boiler steel, 1.61c; marine boiler, 1.91c; bar iron, 1.30c to 1.35c; soft steel bars, 1.41c.

Old Material.—Dealers in old material are showing considerable interest in the offer of the government for bids Sept. 5 of the bulk lot of old French machinery and other scrap which has been accumulated at the Panama canal. It is estimated that from 75,000 to 100,000 tons of mixed material is on hand. A year or so ago, the government awarded the Panama scrap in bulk to the Rosenthal Corporation of San Francisco, but the contract was later rescinded and since then the material has been offered by single cargoes. One of these lots, about 1,000 tons, was sold at Philadelphia yesterday to the Alan Wood Iron & Steel Co. at $11.13 per gross ton, tidewater. New orders are not being placed very freely, and activity is largely in the shipping against or covering of old contracts by dealers. Two sales of 1,000 tons each of heavy melting steel were made this week to eastern mills at $13.25, delivered. There is a better movement of iron mill scrap. We quote gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	$11.25 to 11.50
Old iron axles	17.50 to 18.00
Old steel shafting	14.00 to 14.50
No. 1 heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	12.00 to 12.50
Iron track scrap	11.00 to 11.50
Wrought pipe	9.75 to 10.25
Cast borings	5.75 to 6.00
Wrought turnings	6.00 to 6.50
Heavy cast scrap	11.50 to 12.00
Railroad, malleable	10.00 to 10.50
Stove plate	8.75 to 9.00
Grate bars	9.00 to 9.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York, and to Roebling N. J., $1.00 from Jersey City and $1.50 from New York.

BIRMINGHAM

Selling Prices Do not Reflect Improved Sentiment.

Birmingham, Ala., July 10.

Pig Iron.—There has been a decided improvement in the sentiment of this market, but the actual selling prices are so far unaffected. An effort is being made by the producing interests to maintain a higher asking price for deliveries covering the remainder of the year and in view of the small increase in stock accumulations during the month of June it is believed that an advance will become effective. The largest considerations of the past week were two lots of 1,750 tons and 600 tons each, both of which were for shipment over the remainder of the year and were sold at a $10 per ton Birmingham basis. The sale of a round tonnage of gray forge for September delivery has been reported through an Eastern connection at $9.25 per ton Birmingham and such figures have been received locally for small lots of forge and No. 4 foundry. A large producer has announced an advance of 25 cents per ton on all grades for nearby shipment and still another large concern quotes only on Nos. 2 soft and 2 foundry grades. The small concerns previously mentioned as being practically out of the market adhere to prohibitive prices and the merchant interests have practically nothing to offer. Of the inquiries pending at the time of last report, the larger percentage is still unclosed, which is accounted for by the inability to arrange for deliveries desired at the current prices.

There is still no disposition among any of the producing interests to name a price for deliveries extending into the first quarter and such interests are very careful not to commit themselves in any one transaction for such tonnage as would necessarily be carried over. A very conservative course has been followed in such matters for some months past and the sellers will no doubt be able to avail themselves of any advance on very short notice with the tonnage due consumers limited in most cases to actual or nearby requirements. We quote the market as below for prompt or nearby deliveries

with a tendency to advance for shipments covering the remainder of the year. Revised quotations are, per gross ton, f. o. b. cars Birmingham furnaces, as follows:

No. 1 foundry and soft	$10.50 to 10.75
No. 2 foundry and soft	10.00 to 10.25
No. 3 foundry	9.50 to 9.75
No. 4 foundry	9.25 to 9.50
Gray forge	9.00 to 9.25
Basic, chill cast	10.25 to 10.50

Cast Iron Pipe.—There were no developments of especial interest in this market during the past week. The tonnage placed consisted of small lots for maintenance work and extensions. A round tonnage is to be placed for requirement at San Diego, Cal., within the next ten days, but with that exception no large contracts are now being advertised. In view of the present condition of order books when compared to the daily output, the quotations for this material are being maintained and we continue to quote as follows, per net ton f. o. b. cars here: 4-inch to 6-inch, $22; 8-inch to 12-inch, $21; over 12 inches, average, $20, with $1 per ton extra for gas pipe.

Coal and Coke.—The demand for steam coal other than to apply against contracts is very light, and prices are quite demoralized. It is with great effort that operations are continued at certain of the local mines and no improvement is in sight owing to the general conceded surplus over the consumption by reason of the increase in the several daily outputs. There is a fairly good demand for domestic grades of coal, and the prices for such grades are about in line with those received during the last season. Standard Alabama foundry coke is very firm at the figures asked, and contracts are being entered freely. A large battery of ovens for the production of foundry coke exclusively is understood to have been provided with orders for the entire remainder of this year.

Old Material. — With the largest consuming mill in this district closed down and the smaller consumers only operating to a limited extent, the movement of this material continues very light. It is noted that the shipments from this market to northern and eastern points have been of an unusually small volume for many months owing to the small margin allowed in prices. Dealers' quotations are very much at variance and bargain lots were the principal considerations during the past week. We quote nominally as follows per gross ton f. o. b. cars here:

Iron axles	$15.00 to 16.00
Iron rails	13.00 to 13.50
Steel axles	14.00 to 14.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	11.00 to 12.00
No. 1 country scrap	8.50 to 9.00
No. 2 country scrap	7.50 to 8.00
No. 1 machinery	10.00 to 11.00
No. 1 steel	9.50 to 10.00
Old standard car wheels	11.00 to 11.50
Light cast and stove plate	8.00 to 8.50

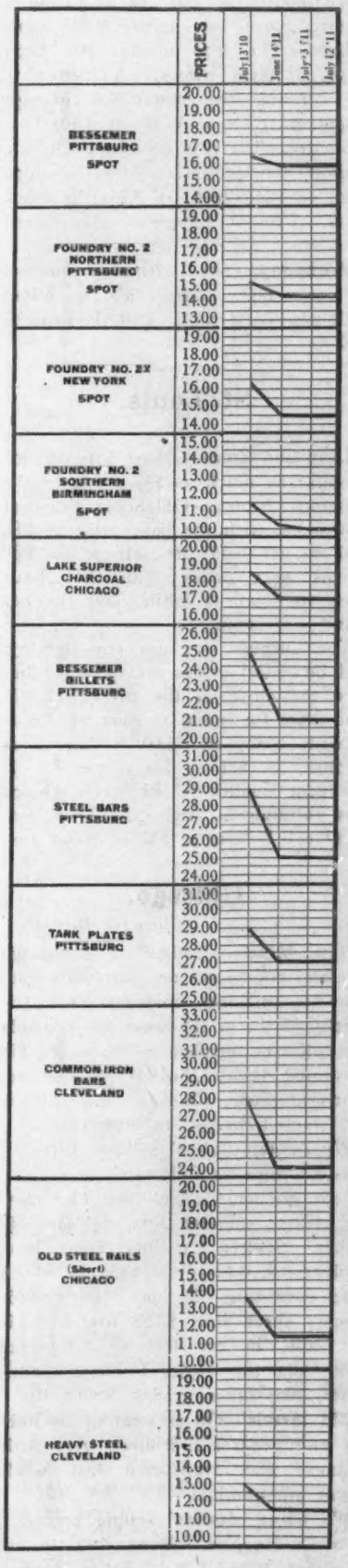
METAL MARKETS

New York

Tin.—Influenced by the arrival of about 150 tons of pig tin that was not scheduled, and 175 tons, which had been posted to arrive this week, together with fewer offerings of metal in storage here, in anticipation of the large shipment due on the Minnetonka Friday, 1,030 tons, spot tin has declined 1c to 43.62½c. Although consumers are cautious about buying, it is easy to dispose of the metal at slight concessions. The London market has been quiet during the past week. Daily transactions were small, and price changes very moderate by comparison with preceding movements. The more normal condition which the foreign market has shown is a reflection most likely of the strong protest made to the governing committee of the London metal exchange by European consumers, following the violent fluctuations during June. Steps have already been taken to have a new tin contract inaugurated as a result of the complaints against the straits tin manipulators. The London market closed quiet to-day. Spot closed at £195 10s and three months at £188 15s. Arrivals of tin since July 1, aggregate 971 tons and there are 2,500 tons afloat.

Copper.—The June report of the Copper Producers' Association was given out Monday, and was received with a mixed feeling by the trade. Some see cause for disappointment in the fact that it did not show a greater decrease in surplus copper, while others feel encouraged that in the face of the largest daily production since January deliveries into domestic consumption, and for export, exceeded the total production by 8,561,768 pounds. Read as an indication of the rate of copper metal consumption in this country and abroad, we are inclined to accept the statement as a favorable one. Production during June was 124,554,312 pounds; deliveries into domestic consumption 61,655,561, and shipments for export 71,460,519 pounds. Stocks of marketable copper on hand in United States July 1, are 157,434,164 pounds. The market conditions are unchanged from last week. Lake is 12.75c to 12.87½c, and electrolytic 12.62½c, cash New York, and 12.75c,

PRICE CHART



delivered 30 days. The London market has advanced back to the high prices of June, on large transactions. Spot closed today at £57 5s 5d and three months at £57 16s 3d. Copper exports since July 1, are 9,735 tons.

Lead.—The lead market has been quiet, at firm prices. All interests are offering the metal for prompt shipment to New York at 4.50c.

Spelter.—There is no change in the market for spelter. Prime western spot, is held firm at 5.75c, in New York. Prompt shipments are offered at 5.70c.

Antimony.—The antimony market is very dull. Cookson's is 8.50c; Hallett's is 8.12½c, and Hungarian is 7.30c.

St. Louis.

July 10.

Lead and Zinc.—Choice lots of zinc brought as much as $45 a ton in the Missouri-Kansas-Oklahoma district last week, with the base price at $43, and 60 per cent ore selling for $40. Prices were firmer than they have been for quite a while, and the demand was strong.

The surplus was cut considerably, and increased prices are expected before the close of the present week. The price for metal at East St. Louis is firm today at $5.60. Calamine is stronger at $21 to $24 a ton for 40 per cent qualities, with extra choice lots running as high as $30 a ton. Lead ore is firm at $57 to $60 a ton.

Chicago.

Chicago, July 10.

New Metals.—Copper is somewhat soft and consumers are extremely cautious in making contracts for tin. Stocks of tin in the west are possibly somewhat better than in the east. Tin is quoted 44½c, Chicago. Spelter remains at 5.65c, Chicago, and lead is still quoted 4.42½c in 50-ton lots.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 13c; casting, 12¾c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.65c; lead, desilverized, 4.42½c to 4.45c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $7.25 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 44½c; Cookson's antimony, 10c; other grades, 9c to 10c.

Old Metals.—On account of the holiday and general shut-down very little business was transacted last week. Prices are nominal.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, 12½c; heavy copper, 12c; light copper, 10½c; heavy red brass, 10½c; heavy yellow brass, 9¼c; light brass, 7c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8½c; tea lead, 3.80c; lead scrap, 4½c; zinc, 4½c; tin pipe, 39½c; tin foil, 38c; pewter, 27c; electrotype plates, free from wood, 4c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; linotype dross, 3¼c; prime slab zinc dross, $70 per ton.

Obituary

Augustus W. Mott, aged 50, vice president of the Mott Iron Works, New York, and a well known yachtsman, died on July 2 at the home of his father in New York City.

Henry B. Pancoast, head of the Henry B. Pancoast Co., Philadelphia, dealer in iron pipe and steam heating apparatus, died at his home in Cornwells, Pa. July 2, at the age of 68.

Andrew Jackson Isler, aged 87, of Crafton, Pa., formerly for more than 40 years a member of the firm of John Herbertson & Co., foundrymen and machinists, died July 2, of apoplexy. He was one of the pioneers of Crafton and vicinity.

Arthur H. Schaffer, son of Joseph Schaffer, president of the Gulf Galvanized Iron & Metal Works, of New Orleans, was drowned last week in the Mississippi river while bathing near Buras. He was prominently identified with business circles though quite a young man.

William Jens, aged 50, formerly assistant to the chief engineer of the Lorain Steel Co., Pittsburg, died in Los Angeles June 30. Mr. Jens, after leaving the employ of the Lorain company, had conducted an engineering business of his own in St. Louis, but recently had gone west because of failing health.

Prof. Benjamin Franklin Thomas, of the department of physics, Ohio State University, died Tuesday morning, July 4, of acute Bright's disease, in the Marine hospital, Bottle Bay Harbor, Me. Dr. Thomas was noted as a technical authority in electricity, and in regard to power and light plants. He has also held many honorary positions during his incumbency of the physics chair at the university.

Frank T. Otley, aged 35, general manager of the American interests of W. Jessop & Son, Ltd., of Sheffield, Eng., died at his home in Washington, July 7, after a short illness. James Otley, secretary of the Jessop company, and the two-year old son of Frank T. Otley, who had been visiting in England, boarded a fast liner for New York on hearing of the illness of the latter, but were unable to reach this country in time.

Cyrus Chambers Jr., president of the Chambers Bros. Co., Philadelphia, manufacturer of paper and clay working machinery, died July 9 at his home, "Bloomfield," in Overbrook, Pa. He was an inventor of considerable promise, having perfected a miniature steam engine at the age of 13. His most notable achievement was the invention of a machine to fold newspapers and books. He was 78 years of age.

George W. Darr, aged 58, a member of the firm of Darr & Moore, stock and bond brokers, Frick building, Pittsburg, died June 5, at his summer home, Greenwich, Conn., from dropsy, after an illness of several months. Mr. Darr was one of the pioneer oil men of the Pennsylvania district. For a number of years he was secretary of the New York & Cleveland Gas & Coal Co. Later he became a member of the firm of Darr, Moore & Preston. Since Mr. Preston's death, Mr. Darr looked after the New York end of the business. In 1901 Mr. Darr was elected president of the Sharon Steel Co.

Tennessee Company Activities

The Tennessee Coal, Iron & Railroad Co. blew in its Ensley No. 5 stack on July 5, while the blast was turned on Ensley No. 1 the latter part of the week. Five open-hearth furnaces at Ensley are to be continued in operation; a new slope at Sumter is to be started up for supplying coking coal for ovens at Nos. 3 and 4 furnaces at Bessemer; the coke ovens at Pratt mines Nos. 3, 4 and 5, as well as 400 ovens at Pratt City and 150 ovens at Bessemer, are to be put in operation. The company will also resume ore mining at Muscoda mines Nos. 1 and 2, and Fossil No. 9.

Buffalo Foremen Elect.—At the annual meeting of the Buffalo Foundry Foremen's Association, officers for the ensuing year were elected as follows: President, Richard Lau, Lumen Bearing Co.; vice president, C. G. Falkenberg, American Malleables; secretary, Robt. B. Thomson, Buffalo Pitts Co., and treasurer, G. C. Devitt, Buffalo Scale Co. A committee was also appointed to provide entertainment for the visiting foundry foremen during the 1912 convention of the American Foundrymen's Association.

CONTRACTS PLACED

For Portion New York Subways, But Bonds Held Up.

A definite step in the beginning of construction of the extensions of the tri-borough subway system in New York City, which involves enormous steel requirements, was taken the past week when the public service commission awarded four contracts to the Bradley Contracting Co. and one to Charles W. Peckworth for work covering a portion of the Broadway-Lexington avenue route extending from Twenty-sixth to 106th streets. The bids of these contractors for this work aggregate $16,139,421, and were taken several months ago when the city first began to show activity with its subway projects. The beginning of the construction work is now dependent upon the action of the board of estimate in authorizing the bonds to be advertised and sold to cover the cost of these sections. As yet, the board has taken no action. Under the most favorable action, it is not expected that the steel for this work aggregating about 50,000 tons, will reach the mills before fall. The remaining sections of the proposed tri-borough extensions are still held up through the franchise negotiations of the city with the Interborough Rapid Transit Co. and the Brooklyn Rapid Transit Co. The American Bridge Co. has furnished much of the steel work for New York's present subways, and is expected to share liberally in the new work.

BASIC BOUGHT

In Philadelphia Market—Pipe Makers Also Placing Orders.

Philadelphia, July 12. (By wire)

An eastern Pennsylvania steel maker has bought 7,500 tons of basic for the remainder of the year at $15, delivered, a higher price than recently paid, but due to greater freight. The furnace price is unchanged. Another steel maker has bought 5,000 tons of basic for prompt shipment at a lower delivered price from a nearby furnace. Pipe makers are buying more liberally. The tonnage generally offered in this market is increasing and some makers are booking double what they did in June.

Indicted Wire Men Plead

A number of the officers, directors and employes of steel and copper and insulated wire companies who were recently indicted as individuals by the Federal grand jury of New York for alleged participation in nine pools or associations, have entered pleas of not guilty to the charges, before United States Judge Archbald, of the New York court. The court gave the defendants until Sept. 1 to change their pleas and held those indicted under $1,000 bail each, which was furnished. As some of the parties indicted are now in Europe, pleas will not be entered by all the defendants for several weeks.

PIG IRON STOCKS

Show Increase Owing to Inactivity of Mills During Fourth of July Period.

Because of the reduced consumption of steel works and other plants during the week of the Fourth, while blast furnace output continued with little interruption, pig iron stocks in different districts have increased considerably. The United States Steel Corporation added about 30,000 tons to its iron in store, which is not as large as was expected, and it is now absorbing this added iron, as its finishing mills and steel works are getting back to their former activity. This week the active ingot capacity of the Steel Corporation is about 60 per cent of the rated total. The Donora and Shoenberger works of the American Steel & Wire Co., in the Pittsburg district, resumed this week after a week's shut down. Blast furnace activities of the Steel Corporation this week are about 64 per cent. Two stacks of the Tennessee Coal, Iron & Railroad Co., at Ensley, Ala., have gone in on basic, the new Newburg furnace of the American Steel & Wire Co., at Cleveland, has been blown in, and the Emma No. 4 furnace at the same place has gone out. A similar change has been made at the Donora group of furnaces of the American Steel & Wire Co., No. 1 having gone in, while No. 2 will soon go out. Statistics of pig iron stocks in the Pittsburg, valley and Ohio districts show an increase of 33,000 tons the last two weeks in June. This was equally divided between merchant and steel works furnaces and was brought about with four less furnaces in blast.

Exchanged for Ore

It now develops that some furnace interests just outside of the valley territory recently disposed of a considerable tonnage of basic pig iron, the iron figuring in an exchange deal for one.

ENCOURAGING GAIN

Shown By Corporation Bookings In Face of Mill Activities.

In view of the active shipments and operations during June, the latter of which at one time reached 73 per cent of full capacity, the monthly statement of unfilled tonnage of the United States Steel Corporation as of June 30 netting a gain in bookings of 247,871 tons, is an encouraging showing. The unfilled business on the Steel Corporation's books as of June 30, was 3,361,058 tons, compared with 3,113,187 tons May 31. This is the highest point the tonnage has reached since March 31 of this year and it is the first increase to be announced since that date. The percentage gain of unfilled orders in June over May was 7.96, compared with a loss of 3.28 per cent in the showing of May over April.

Ingot operations of the subsidiaries of the Steel Corporation during the month of June averaged between 65 and 70 per cent of full capacity, the record being the best of any month of the current year with the exception of March. Export business, which was unusually heavy in June, furnished a considerable percentage of the tonnage entered in the month. This is a source of business from which only two or three of the independent steel companies of the country profit in a proportionate degree as the Steel Corporation.

Since the plan of making monthly statements of unfilled tonnage has been followed by the Corporation, the statements of business on hand, the tonnage and percentage of increase or decline from the previous month, have been as follows:

Date.	Total.	Change, Tonnage.	Change, Per cent.
June 30, 1911....	3,361,058	247,871+	7.96+
May 31, 1911....	3,113,187	105,617—	3.28—
April 30, 1911...	3,218,704	228,597—	6.63—
March 31, 1911..	3,447,301	46,758+	1.37+
Feb. 28, 1911...	3,400,543	289,624+	9.31+
Jan. 31, 1911....	3,110,919	436,162+	16.30+
Dec. 31, 1910....	2,674,757	85,656—	3.09—
Nov. 30, 1910....	2,760,413	111,536—	3.88—
Oct. 31, 1910....	2,871,949	286,157—	9.12—
Sept. 31, 1910....	3,158,106	379,088—	10.74—
Aug. 31, 1910....	3,537,128	433,803—	10.92—
July 31, 1910....	3,970,931	286,863—	6.72—
June 30, 1910....	4,257,794	.....	.....

The relative statement of the Corporation's unfilled tonnage at the end of each quarter since Sept. 30, 1909, at which date the recent low mark of orders on hand was reached, preceding the decline shown by the monthly statements, is as follows:

June 30, 1910	4,257,794
March 31, 1910	5,403,514
Dec. 31, 1909	5,927,031
Sept. 30, 1909	4,796,133

New Fiscal Year Record Made in Exports

Eleven Months' Total Exceeds Any Previous Twelve Months' Total—May Exports Exceed Any Previous Month Except March and April

Iron and steel exports in the 11 months ended May were much larger than in any full calendar or fiscal year. The exports in the fiscal year ended June will probably exceed 1,900,000 tons by a considerable margin. Tonnage exports by fiscal and calendar years have been as follows, in gross tons:

	Fiscal.	Calendar.
1902	495,661	372,398
1903	302,492	326,590
1904	676,590	1,167,710
1905	1,123,580	1,010,255
1906	1,331,323	1,325,740
1907	1,229,245	1,301,979
1908	1,161,270	864,242
1909	1,059,239	1,243,462
1910	1,396,395	1,535,698
1911	1,900,000*	

*Estimated.

The gain in the fiscal year 1911 over the best previous fiscal year, 1910, is 36 per cent. The largest gains in point of tonnage were in scrap, pig iron and billets, sheet bars, etc., there being also large gains in structural material and sheets and plates. Wire products showed a moderately large gain, rails and tubular goods a light gain, and rods a slight loss.

The distribution as to main groups of tonnage lines was as follows in the 11 months:

	Per cent.
Scrap and pig iron	11.6
Unfinished steel	10.6
Rails	20.7
Structural, sheets and plates	24.9
Bars	7.4
Wire and nails	14.0
Pipes and fittings	19.4
Tin plates	1.6

May exports were 178,385 gross tons, showing a large decrease from April, when the record of 227,835 tons was made. The May exports, however, were the largest on record with the exception of the preceding March and April.

Imports Light.

Imports were light in May, totaling 23,376 gross tons of scrap, pig iron, unfinished steel and rolled steel, including tin plates. The total was substantially the same as in the preceding two months, slightly in excess of February imports, and considerably less than January imports. The average for the 10 months of the fiscal year preceding May was 31,256 tons.

Iron Ore Imports.

Imports of iron ore by months are shown in the following table:

	1909.	1910.	1911.
January	105,233	284,823	102,600
February	67,749	170,427	94,820
March	108,676	163,633	134,785
April	74,782	206,135	133,900
May	97,393	240,833	217,467
June	124,714	193,415	.....
July	172,316	248,810	.....
August	209,855	282,949	.....
September	164,613	208,892	.....
October	179,505	219,571	.....
November	174,976	197,833	.....
December	222,609	173,710	.....
Totals	1,694,957	2,764,741	683,572

The sources of iron ore imports are shown in the following table, which gives the imports in May and in the five months of the year ending with May:

	May.	Five months.
Spain	28,131	88,974
Sweden	35,899	97,247
Canada	7,432	8,231
Newfoundland	21,980	34,410
Cuba	124,025	450,270
Other countries	.....	4,440
Totals	217,467	683,572

IRON AND STEEL EXPORTS, GROSS TONS.

	May,		Eleven months, ending May,	
	1910.	1911.	1910.	1911.
Scrap	3,687	10,351	14,508	53,764
Pig iron	7,814	6,274	70,917	145,064
Billets, sheet bars, etc.	180	21,520	49,313	167,718
Wire rods	1,835	2,224	22,443	17,029
Rails	35,516	36,900	344,186	359,157
Structural iron and steel	15,750	18,450	104,472	156,331
Bar iron	2,057	1,457	14,644	16,675
Steel bars	8,201	11,244	81,062	111,347
Sheets and plates	22,106	27,221	216,818	275,050
Tin plates	1,461	4,695	10,918	27,182
Barb wire	7,350	7,975	67,854	75,459
All other wire	8,234	10,073	73,010	100,067
Cut nails and spikes	1,032	1,047	8,449	9,504
Wire nails	4,997	3,214	34,094	46,851
All other, including tacks	.....	1,236	7,666	11,289
Pipes and fittings	13,301	14,504	150,779	164,011
Totals	134,706	178,385	1,271,133	1,736,498

IRON AND STEEL IMPORTS, GROSS TONS.

	May,		Eleven months, ending May,	
	1910.	1911.	1910.	1911.
Scrap	3,253	2,601	116,370	24,196
Pig iron	21,405	12,273	223,606	187,095
Billets, bars and steel, n. e. s.	3,885	2,030	34,797	36,192
Wire rods	2,174	1,227	14,041	16,628
Bar iron	4,305	2,850	29,962	27,500
Sheets and plates	460	196	6,424	3,454
Tin plates	7,087	2,199	63,553	40,874
Totals	42,569	23,376	488,753	335,939

Heater Combine

The Federal Heater Co., which was recently organized with $9,000,000 capital to take over a number of manufacturers of house warming heaters and furnaces, has issued $4,000,000 worth of 7 per cent cumulatve preferred stock and $4,200,000 worth of common stock. The balance will remain in the treasury. Part of the preferred stock will be offered at par with a 10 per cent bonus of common stock. The companies absorbed by the larger corporation are: The Henry & Scheible Co., Cleveland; the Century Heating & Ventilating Co., Akron, O.; the Peck-Williamson Heating & Ventilating Co., Cincinnati; the International Heater Co., Utica, N. Y.; the L. J. Mueller Furnace Co., Milwaukee; the Quaker Mfg. Co., Chicago; the Ideal Furnace Co, Detroit. A. W. Williamson, of the Peck-Williamson Co., has been elected president of the merging company.

The Standard Steel Co., of Bedford, O., will shortly increase its capital stock from $40,000 to $100,000, the increase to provide new equipment.

EXPORTS OF TONNAGE LINES—GROSS TONS.

	1907.	1908.	1909.	1910.	1911.
January	102,630	74,353	70,089	118,652	152,144
February	87,912	81,773	84,860	110,224	150,704
March	112,787	96,681	94,522	124,980	215,671
April	132,790	93,285	100,904	117,921	227,835
May	91,543	64,041	109,977	135,306	178,385
June	92,996	69,770	114,724	120,601	.....
July	122,240	86,796	100,680	128,060	.....
August	118,792	86,244	105,694	131,060	.....
September	114,819	76,732	97,392	118,737	.....
October	123,170	85,766	110,821	129,325	.....
November	116,309	71,130	115,943	154,725	.....
December	86,019	77,659	137,688	149,666	.....
Totals	1,301,979	964,242	1,243,467	1,535,698	924,739

VALUE OF IRON AND STEEL EXPORTS—TONNAGE AND NON-TONNAGE.

	1907.	1908.	1909.	1910.	1911.
January	$ 14,327,926	$ 13,468,058	$ 10,329,388	$ 14,513,394	$ 18,739,961
February	13,946,842	14,063,559	10,947,159	13,949,082	18,690,792
March	16,419,116	15,168,155	13,874,461	17,258,503	22,591,848
April	17,684,863	15,455,319	13,058,054	16,529,254	24,917,056
May	14,594,043	11,281,415	12,993,197	17,658,042	20,616,795
June	17,226,259	11,677,944	13,779,736	16,503,204	.....
July	17,614,017	12,085,951	11,866,772	16,108,102	.....
August	17,587,181	12,058,561	14,136,219	17,628,538	.....
September	16,830,160	11,221,799	12,966,908	16,776,178	.....
October	18,786,750	11,505,063	14,249,598	17,452,085	.....
November	17,051,755	10,895,549	14,434,690	18,593,806	.....
December	14,997,869	12,231,741	15,075,183	18,300,710	.....
Totals	$197,060,781	$151,113,114	$147,680,331	$201,271,903	$105,556,452

LOUISVILLE PLANT

Will Continue in Operation.—Oakley Plant Will Soon be Finished.

Announcement has been made by Morris U. Bernheim, president of the Alvey-Ferguson Co., Louisville, that the local plant, which it was reported would be moved to Cincinnati, would be continued in operation. The new plant at Oakley, near the Ohio city, is being rushed to completion and will be ready for use late in August. Both plants will then be operated, the main offices of the company probably being at Oakley. The equipment for the new plant has been contracted for and will be installed shortly, as the main part of the building has been finished. No reason for the decision to continue the Louisville plant has been given, but it is known that the commercial organizations made strong efforts to secure its continuance. The company is a large manufacturer of conveying machinery.

Progress at Duluth

Steel for the superstructure of the open hearth furnace of the Minnesota Steel Co.'s new plant at Duluth, has arrived and construction work is on. The building will have dimensions of 1,250 x 150 feet and will contain 14 furnaces. Only one-half of the battery will be placed in commission at the commencement of operations.

More than 400 men are employed at the new works at this time. Foundations for two large blast furnaces have been completed and work on the superstructure will be started at once. The forge shop, machine shop and power plant are completed, as well as the concrete bins for ore, coke and limestone.

Rail Company Increases Capital

The Manganese Steel Rail Co., with headquarters at 30 Church street, New York City, has taken out a charter under Delaware laws with a capitalization of $6,000,000, but this action does not signify any important changes in the company's policies or affairs. The company was formed in 1908 in New Jersey with a capital of $400,000, and the increase in financial resources reflects the progress that has been made in introducing its special alloy rail into the service of numerous steam and electric railroads in this country. Under a patent process, the Manganese Steel Rail Co. is marketing an alloy rail containing about 12 per cent manganese, which is designed to withstand the severe service of excessive curves or of certain other parts of the road where the rail wear is heaviest. At first some of these rails were rolled by the Passaic Steel Co., Paterson, N. J., but they are now being manufactured under contract at the South Chicago mills of the Illinois Steel Co. A record of a recent test, made on the service of the manganese rail at a point of severe traffic and wear upon the lines of the Interborough Rapid Transit Co., New York, showed that the section was affected only about one-tenth as much as a standard Bessemer rail. The rail is made to conform to all the established standard sections, the patents covering only the process of steel-making. The officers of the company are: President, F. W. Snow, president of the Rampao Iron Works, New York City; vice president, W. S. Potter; secretary and treasurer, R. J. Davidson.

FREIGHTERS COLLIDE

And the John Mitchell Sinks.—Three of the Crew Drowned.

The bulk freighter John Mitchell was sunk in collision with the steamer W. S. Mack about eight miles above White Fish Point, Lake Superior, early Monday morning, July 10, there being dense fog prevailing. The impact was mortal and the Mitchell sank almost immediately. Three members of her crew were drowned. The ramainder of her crew and her passengers, guests of the management, managed to cross over a ladder to the Mack, which stood by. The Mitchell was owned by C. W. Elphicke of Chicago and was built at the St. Clair yard of the Great Lakes Engineering Works in 1907. She was 440 feet over all, 420 feet keel, 52 feet beam and 28 feet deep.

Moves Aug. 20

The general offices of the Republic Iron & Steel Co. will be moved from Pittsburg to Youngstown, O., about Aug. 20, instead of June 21 and 22, as originally planned. It is expected that the company's new office building at Youngstown will be completed about the middle of August. Arrangements have been made for special train service for moving the offices.

The executive and eastern district sales offices of the Republic Iron & Steel Co. have been removed from 115 Broadway, New York, to a commodious suite on the fourteenth floor of the new Whitehall building annex, West street and Battery place.

NEW SYNDICATE

Formed by the Taking Over of Light and Power Companies.

Pittsburg, July 11.

The new light and power syndicate formed by Van Horn Ely and his associates, including the light and power plants and franchises, in Waynesburg, Washington, McDonald, Oakdale, Cannonsburg and intervening points has been taken over by the J. S. & W. S. Kuhn Corporation of Pittsburg. The deal involves properties estimated to be worth nearly $2,000,000. The purchase of these properties, it is said, will be followed by their transfer to the West Penn Railways Co., which has been preparing for extensive developments along these lines, and which will finance the deal by the use of some of its treasury bonds, that have been readily marketed. These bonds have been underwritten by a syndicate of New York, Philadelphia and Pittsburg financial institutions and bankers, and it is said that with the money raised, the plants and properties of the Ely syndicate will be connected up and central power stations established and the territory covered with a complete system of lighting and power lines.

It is stated that the purchase of these properties is one of a number of important moves to be made by the West Penn Railways Co., which will place that torporation among the greatest light and power corporations in this section of the country. The West Penn Railways Co. has an authorized bond issue of $25,000,000, of which only $700,000 is outstanding and $9,000,000 is in the treasury available for use at any time.

Blowing Engine Purchased

The Colonial Iron Co., Riddlesburg, Pa., through its engineers, Frank C. Roberts & Co., Philadelphia, has purchased for its new furnace plant, a condensing turbo blowing engine from the General Electric Co. The engine will have a capacity to deliver 25,000 cubic feet of air per minute against a pressure of 25 pounds per square inch, but will be designed to be most economical when delivering 20,000 cubic feet of air against a pressure of 13 pounds per square inch.

The Gem City Acetylene Generator Co., Dayton, O., advises that it is completing improvements to its factory.

Personal

W. M. White has become manager and chief engineer of the hydraulic turbine department of Allis-Chalmers Co., Milwaukee.

Calvert Townley has resigned as vice president of the Connecticut Co. to resume his connection with the Westinghouse Electric & Mfg. Co.

Willard C. Brinton, formerly with the Westinghouse Electric & Mfg. Co., has become assistant vice president of the U. S. Motor Co., New York.

Arthur J. Hoskin has resigned from the faculty of the Colorado State School of Mines, and has opened an office in the Commonwealth building, Denver.

Henry Evans, president of the Continental Insurance Co., New York, has been made chairman of the executive committee of Manning, Maxwell & Moore, Inc.

Robert Maher has been appointed superintendent of the Hostetter plant of the Hostetter-Connellsville Coke Co., Connellsville, Pa., to succeed Richard D. Keedy, resigned.

C. N. Thorn, formerly purchasing agent of Hugh Kelly & Co., New York, has accepted a position as assistant general manager of the Allied Machinery Co. of America, New York.

George Braithwaite, factory manager of the Stevens-Duryea Co., Chicopee Falls, Mass., has accepted a position as superintendent of the machine shops of the Thomas B. Jeffery Co., Kenosha, Wis.

W. A. Stearns has resigned as mechanical engineer of the Louisville & Nashville at Louisville Ky., to become assistant to the chief mechanical engineer of the American Steel Foundries at St. Louis.

E. Burton Smith, who has been connected with the Newark plant of the General Electric Co., has been appointed superintendent of the Toledo Lamp Works, a subsidiary of the same company.

W. C. Duntley, president of the Chicago Pneumatic Tool Co., sailed on board the Kronprincessin Cecilie, June 27, for Europe, where he will spend several weeks in the interest of the company's foreign business.

President James A. Farrell, of the United States Steel Corporation, is expected to return this week from a trip to Brussels, Belgium, where he was present at the international conference of iron and steel makers.

W. F. Duncker, a wealthy manufacturer of tools, shears and other products of steel in Hamburg, Germany, is inspecting the steel manufacturing plants of this country. He is at present in New York.

H. J. Freyn, until recently assistant engineer of construction of the Illinois Steel Co., South Chicago, Ill., has become consulting engineer in the gas engine department of the Allis-Chalmers Co., West Allis, Wis.

Frank G. Payson for the past six years traveling expert for the Niles-Bement-Pond Co., New York, has accepted a position as western representative for the Union Petroleum Co., Philadelphia, with headquarters at Chicago.

J. W. Small, superintendent of machinery of the Kansas City Southern, at Pittsburg, Kans., has been appointed superintendent of machinery of the Missouri Pacific, with office at St. Louis. He succeeds G. W. Smith, resigned.

Frederick C. Brunke, for many years connected with the Buffalo office of the Carnegie Steel Co., was appointed manager of sales at the new Toronto office of the United States Steel Products Co., effective July 1.

W. Lester Walker has been appointed general sales manager of the Allegheny Steel Co., Pittsburg, succeeding E. M. S. Young, resigned. Mr. Walker is also general sales manager of the Pittsburg Metal Products Co.

S. M. Kitner, of the railway engineering department of the Westinghouse Electric & Mfg. Co., on June 30 resigned to become general manager of the National Electric Signal Co., with offices in the Farmers' Bank building, Pittsburg.

W. E. Buckingham, formerly with Milliken Bros. Inc., has become attached to the New York district sales office of the Lackawanna Steel Co., 2 Rector street. Several years previously, Mr. Buckingham was in the employ of the Lackawanna Steel Co.

Charles M. Schwab, president of the Bethlehem Steel Corporation, who has been abroad for the past several months, sailed for home this week. Mr. Schwab attended the international conference at Brussels as one of the delegates of the steel industry of this country.

Theodore Kauffman, formerly manager of the Chicago plant of the S. Obermayer Co., has been appointed to the position of general manager of that company, with headquarters in Cincinnati, in the place of the late H. F. Frohman. Samuel Johnson succeeds Mr. Kauffman as manager of the Chicago office.

Capt. R. J. Coomb, former superintendent of the Onandango mine, one of the Republic Iron & Steel Co.'s properties at Virginia, Minn., has been appointed temporary superintendent of the Chandler mine, Ely, Minn., to succeed Capt. John Kent, who leaves in a few days for a three months' vacation at his old home in Cornwall, Eng. He will be accompanied by Mrs. Kent.

LOW PRICES

Still Made on Basic, But Advance is Expected.

Pittsburg, July 12. (By wire.)

A nearby consumer has purchased 1,000 tons of basic pig iron at less than $13, valley, for July shipment. Developments of the past few days indicate that practically all of the extremely low-priced pig iron has been disposed of, and consumers look for higher prices. On account of the heavy tonnage sold recently at low prices, numerous inquiries have been made by speculative buyers, and one interest reported two sales of small lots of Bessemer for prompt shipment at $15, valley. The Josephine furnace of Corrigan, McKinney & Co. and one non-merchant furnace at Sharon, Pa., have been blown in. The Struthers stack has been blown out.

Railroad Buying

New York, July 12. (By wire.)

Reported rail sales are small. The Illinois Steel Co. reports 3,300 tons including 2,500 tons to Chicago, Milwaukee & St. Paul. The Carnegie Steel Co. has 1,100 scattering. The Maryland Steel Co. has taken 2,000 80-pound for the Havana Central. The Erie Railroad has postponed until July 20 taking bids on 3,800 cars.

Axle Mill Starts

Chicago, July 12. (By wire.)

The axle mill of the Gary works of the Indiana Steel Co. has been placed in operation for the first time.

C. S. Freeland, chief engineer of the Porterville Northeastern Railway Co. with headquarters at Porterville, Cal., states that the company does not contemplate the erection of machine shops as has been reported in a number of trade papers.

Henry D. Lewis, Detroit, has taken the contract for 300 tons of steel for a new building for the Cadillac Motor Co., Cadillac, Mich.

Electric Butt and Spot-Welding Processes

Data on Costs and Methods of Operation—Descriptions of the Various Types of Machines in Use

The electric welding of metals is not a new process, but in the last few years it has been successfully applied in the manufacture of many products that have heretofore been made by other methods. For the various new applications, many special machines have been designed. Automatic and semi-automatic welders, both belt and motor-driven, are rapidly replacing hand or foot-operated machines. While the mechanical operation of electric welding machines is comparatively simple, the electrical principles involved are not so well understood. The two operations are broadly classified as butt-welding and spot-welding. Butt-welding covers all work on which the ends or the sides of the material are welded together, while spot-welding, as the term implies, is done only in spots and is used to fasten together overlapping sheets of metal in the same manner as riveting, being in fact a method of riveting without the use of rivets.

Single phase, alternating current is used in electric welding. The primary supply can be of any voltage from 110 to 500, and of any frequency from 25 to 140 cycles per minute. The standard voltages of 220 and 440, and a frequency of 60 cycles are generally used, as it simplifies the electrical construction of the welding transformer. The action of an electric welder is similar to the operation of an induction motor. While the power factor at the jaws of the welder at the instant of welding is unity, the power factor outside the transformer terminals varies from 65 to 85 per cent, with the average about 75 per cent, depending on the character of the work, the method in which the welding is done and the time consumed in making the weld. The power used in making a weld is the product of two variables, time and the kilowatt capacity necessary to make the weld.

Table I
Shortest and Longest Butt-Welding Periods.

Size, inches.	Time, seconds.	Current amperes.	Volts per square inch.
¼	2.7	1960	39.5
¾	5	1645	33.3
⅜	4	4330	45.5
¾	5.27	2190	197
½	4	6600	36.6
½	15.8	1800	13
⅝	3.6	8400	8
⅝	21.5	3400	12.25
¾	3.5	9400	33.7
¾	10.85	5510	18.85
¾	4	10000	16.26
¾	22.2	9400	29.7
⅞	7	11900	27.7
⅞	17	10550	19.6
1	33	7740	10.35
1	114	4450	16.1

Principle of Electric Welding.

The principle of electric welding is based on the fact that in any electrical circuit, the greatest amount of heat is generated at the point of greatest resistance. As the point of greatest resistance is necessarily at the point where the two metals are brought together, a large amount of heat is generated and the metals softened so that they will weld together. The lowest temperature at which a good weld can be made is about 1,150 degrees Cent. and the highest temperature, 1,350 degrees Cent. The best welding temperature has been found to be 1,200 degrees Cent.

In welding, electrically, the current is used at a very low voltage, varying from 1 to 4 for various classes of work. The standard line voltage is stepped down or transformed from 220 or 110 volts by a special transformer placed in the base of the welder. The current consumption, in amperes, varies with the work and the time taken to make the weld. More current is generally used than is necessary, from an economical standpoint, to cut down the time consumed in making a weld. In Table I are given the results obtained by butt-welding round stock ranging from ¼ to 1 inch in diameter, in the shortest and longest time possible. The difference in current consumption is very great and in most cases the shorter time in seconds was the more economical of the two, although neither is the most economical rate at which the material can be welded.

Fig. 13 shows the range of variations possible between time and kilowatts of the transformer. The current indicated by the maximum economy curve is rarely followed in practice, as the time element is generally made as low as possible to get a large output per machine per day.

The underlying principle of the electric welder is an adaptation of the well known fact that a poor conductor of electricity will offer sufficient resistance to the flow of the current that it will heat. This is on the same principle as an incandescent lamp; the copper wires leading to the lamp

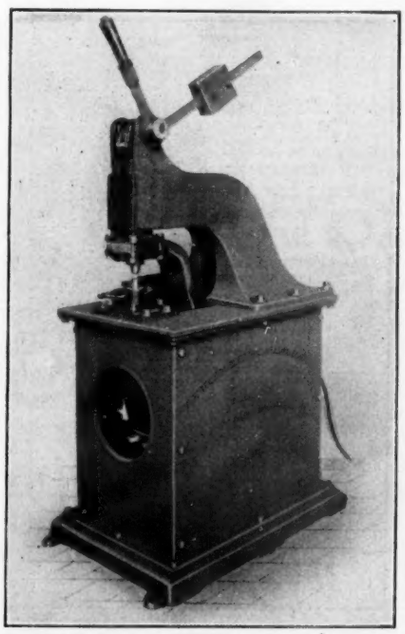


FIG. 1—TOLEDO WELDER FOR SPOT-WELDING ¼ TO ½-INCH STOCK

FIG. 2—TOLEDO NARROW THROAT SPOT-WELDER

are good conductors and remain cool, but the carbon filament of the lamp, being a poor conductor and offering such a great resistance to the flow of current, becomes white hot or reaches a state of incandescence. The degree of heat depends upon the amount of current and the resistance of the conductor.

An electric current follows the path of least resistance. When there is any resistance to the flow of current, heating takes place. When the ends of two pieces of metal are brought together, this is the point of greatest resistance in the electric circuit, and the ends will heat. The hotter this metal becomes, the greater is its resistance to the flow of current; consequently, as the edges of the abutting ends heat, the current is forced into the adjacent cooler parts and there is a uniform heat throughout the entire mass. The essential parts of an electric welder are briefly, a transformer, clamping jaws and a compression mechanism. The transformer is of special design, so built that its secondary terminals will deliver current at a very low voltage while the primary circuit is connected to an alternating current supply of standard voltage. The secondary windings are often made as solid copper castings extending through the laminated iron core. The secondary leads must be of large size and are generally constructed of flexible copper cables or flat copper ribbons.

The clamping dies must be made of copper to give a good electrical contact on the stock being welded. Generally the left hand die is stationary, but adjustable to different lengths, while the right hand die is used to compress the stock. Each die is attached to a terminal of the transformer by a flexible conductor. As a pressure of about 5,000 pounds per square inch is necessary in butt-welding to force the two parts to be welded together, various compression devices are used, depending on the sizes of the material welded. For welding sectional areas equivalent to ¾ inch round stock, a simple hand toggie is used to force the welding jaws together. From ¾ to 1 inch round stock or equivalent area, a hand wheel and gears are used, while about 1 inch stock, double acting hydraulic jacks are employed.

In using electric welding to replace ordinary forge welding and for developing new lines of manufacture, the efficiency and reliability of the welds, the output possible in welds per hour, the adaptability to various sizes of work, the cost of operation and the initial cost of the machines and auxiliary apparatus must be considered. The manufacturer is not concerned so much with the ability to get good welds as with the cost, efficiency and reliability of the welds.

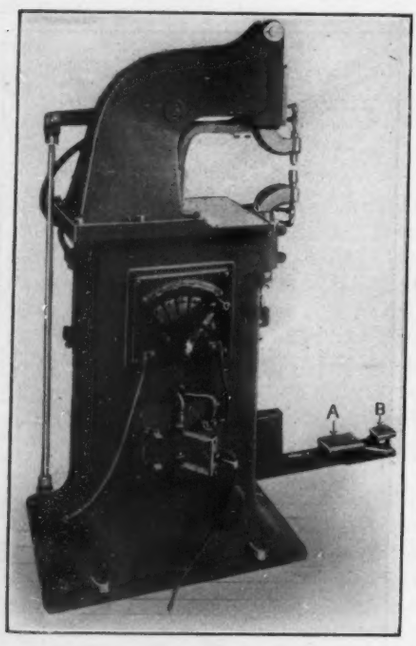


FIG. 3 — FOOT-OPERATED SPOT-WELDER, BUILT BY THE TOLEDO ELECTRIC WELDER CO.

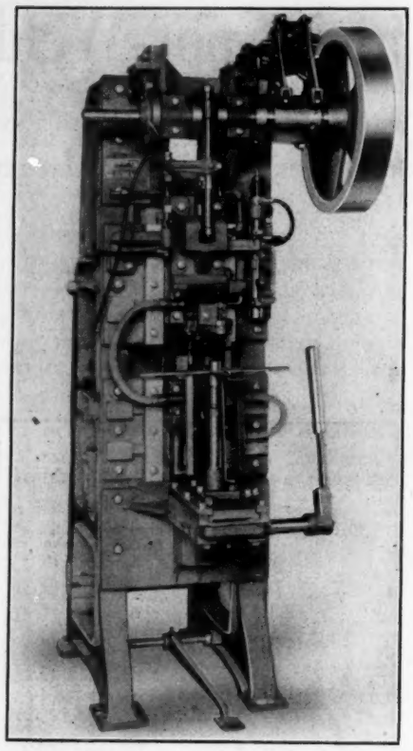


FIG. 4 — VERTICAL, SEMI-AUTOMATIC WELDER, BUILT BY THE THOMSON ELECTRIC WELDING CO., LYNN, MASS.

The weld of course must be a perfect union over the entire area of the piece welded, as the welds must stand severe longitudinal and torsional strains in any direction. The reliability of the electric weld determines the shop production costs. As generally built, each machine is adapted to one kind of work. No machine can be used for all shapes and sizes of work or for all qualities of metal. In many cases the machines are entirely special, being fitted to do no other work than that for which they have been built. Many general purpose machines are now made on which a wide range of material can be handled. Voltage regulators are used to adjust the power needed to weld parts much smaller in capacity than the regular stock. This is not economical in some instances, as the time required to set the welding dies is an important factor, while the proper arrangement of jigs is essential and a large machine cannot be as easily and as quickly handled as a small one.

The design and size of the machine, of course, determine its output to a large extent. With automatic or semi-automatic machines, on light work, the output in pieces is very high. On automatic wire welders, wire can be taken from the reel, cut off, welded and delivered at the rate of 650 pieces per hour. With hand operated machines the output depends on the general shape and size of the work and the time required to clamp and unclamp the dies. On a hand machine using straight stock, 250 welds can be made per hour on stock with a cross-

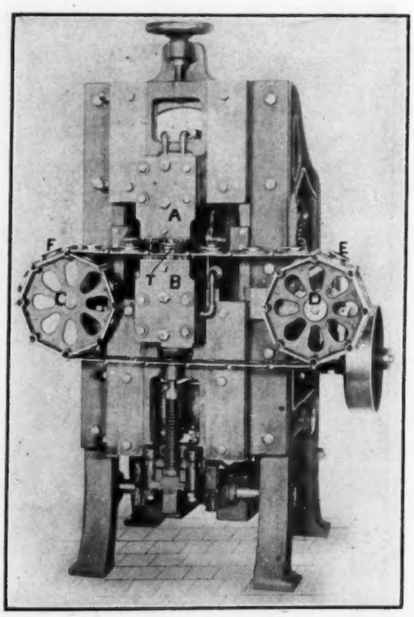


FIG. 5—THOMSON AUTOMATIC SHEAVE WELDER

section equivalent to ¾ square inch of round stock. Ten feet of ⅜ inch plate can be butt-welded per hour. Tests made on electric butt welds show the average efficiency of the joints to be about 80 per cent, while some are as high as 85 per cent and some as low as 60 per cent.

Metals That Can be Welded.

Iron, steel, brass, bronze, copper and aluminum can be electrically welded. The greater the electrical conductivity of the metal the greater the amount of current necessary to raise it to a welding temperature. Consequently, iron with a comparatively low electrical conductivity, is much easier to weld than copper with a relatively very high electrical conductivity. Cast iron can be welded, but as it becomes liquid instead of pasty when heated, it must be supported by a mold of some character which makes it inconvenient to handle easily. The initial cost of welding machines, therefore, depends upon the material to be welded and upon the shape of section independent of the area of the section. Heavier dies are required to weld 6 x ⅛-inch flat material than the same area of round stock. For handling 6-inch material a special mechanism with clamping jaws, designed to give an even distribution of current along the cutting edges, is required. Automatic and special machines cost more than hand or foot-operated machines of standard sizes. No flux is used for welding, as the pieces are cleaned automatically. The two abutting surfaces exclude the air and they are raised to a welding temperature in a very short time. No gases are formed. As the voltage is very low, there is no danger to the operator, and as the heat is absolutely localized and concentrated at the weld, it travels back but little by conduction. Practically no heat is wasted, as the work is always within view of the operator, who can easily judge the correct welding temperature. Table II contains the results of tests made to determine the cost of power for making electric butt welds on material ranging from ¼ to 2 inches in diameter.

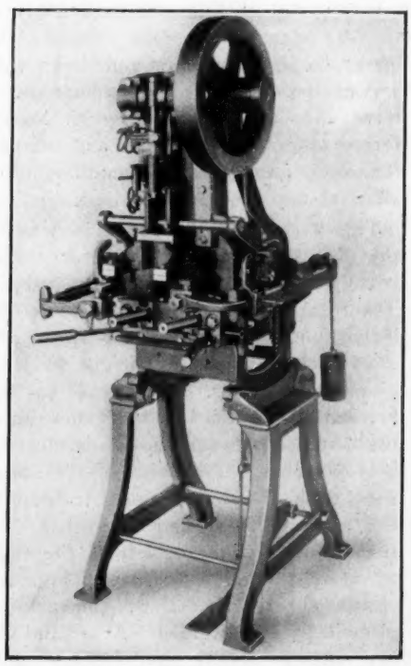


FIG. 6—THOMSON FERRULE WELDER

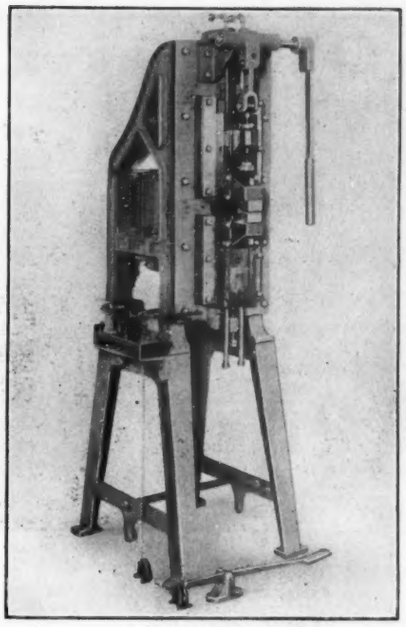


FIG. 7—THOMSON STANDARD, VERTICAL WELDER

Table II.
Cost of Power.

Area in square inches.	Kilowatts.	Welding time seconds	Cost per 1,000 welds current at 1c per kilo. hr.
0.05	5	5	$0.07
0.11	7½	6	0.13
0.20	8	10	0.22
0.31	10	12	0.33
0.44	12	15	0.50
0.60	15	20	0.83
0.79	18	30	1.50
0.99	20	30	1.66
1.23	26	40	2.89
1.77	40	60	6.67
2.41	45	70	8.75
3.14	56	80	12.44

Electric butt-welding has been applied to the manufacture of tires, axles, pipe coils for refrigerators, wire of all kinds, and for countless manufactured products from machine screws to machine tools. In special applications are such developments as electric welding of street railway rails and the manufacture of steel tubing. In electrically welded rails the breakage has been found to be less than 2 per cent and the breaks always occur at the edge of the heated zone. In bonding rails, 3,000 amperes at approximately 5 volts are used for a period of 45 to 120 seconds. Three men can bond about 100 rails in 12 hours. Four cars are generally used, carrying a motor-driven air compressor, sand blast, rotary converter, transformer, combined welder and hydraulic grip, water cooling system and a belt-driven grinder. Current is taken from the trolley at 500 volts. The rails are spiked in position, cleaned with sand and wrought iron plates, 1⅛ inches thick, are held on the sides of the rail at a pressure of 1,000 pounds. Three thousand amperes are used and the area heated is approximately 3.5 square inches. When the rail is soft, the pressure is increased to 4,000 pounds, which completes the weld. The current is generally applied for two to three minutes.

Spot-Welding.

At present an entirely new field for electric welding is being developed in th form of spot-welding or electric riveting. As indicated by the name, spot-welding is a method of joining metal sheets together at any point by a spot the size of a rivet, without punching holes or using rivets. It is

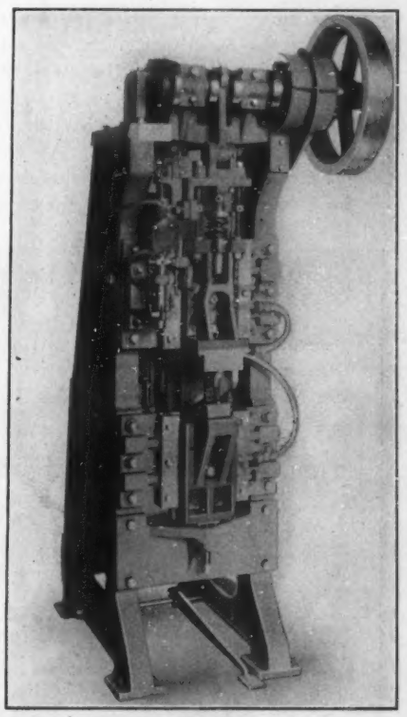


FIG. 8 — THOMSON SEMI-AUTOMATIC PUNCH PRESS WELDER

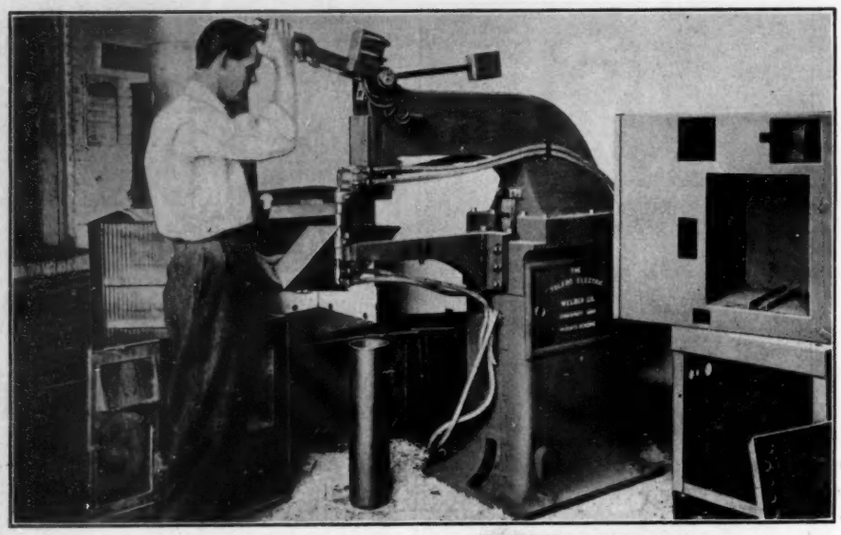


FIG. 9—TOLEDO WELDER USED FOR WELDING STOVE PARTS

done electrically by fusing or melting the metal at the point desired and at the same instant applying sufficient pressure to force the particles of molten metal together. The application is based upon the resistance of a poor conductor to the flow of current as it is found in the butt electric welder. The degree of heat depends on the amount of current and the resistance of the conductor.

In spot-welding, a large volume of current at so low a voltage that it cannot be felt by the bare hand, passes through a pair of copper die points. Two or more pieces of sheet metal are placed between the dies. When the current is turned on, the steel offers so great a resistance to the flow of the current that it quickly heats at the point under the dies. As the steel heats, its resistance to the flow of the current increases, and the current flows through the adjacent cooler parts bringing all the metal in proximity to the dies up to the welding temperature. With a slight pressure the dies are forced together and the metal is united. The copper dies are reversible and one of them is flat, so that either side of any article that is welded need not be moved by the die points. In Fig. 11 is shown, diagramatically, the construction of both sides of a "Toledo," No. 14, spot welder. The current is conducted through a double-pole, single throw, knife switch and fuse block and brought into the transformer located in the base of the welder. A regulator is used to choke down the current for welding stock that is less than the maximum size, as it takes less current to weld No. 30 gage sheets than No. 10. Both copper dies are water-cooled internally, by means of a small amount of circulating water that is taken under pressure from the city mains and brought to ¼ inch of the points of the dies. A ½-inch water pipe and rubber steam hose is used to connect the dies and water supply. The return water is wasted through an overflow. The lower die is adjustable, but stationary. The flat upper die is moved up and down by a counterweight and lever which contains a switch box and switch lever for turning the current on and off as the welds are made. No auxiliary devices of any kind are required.

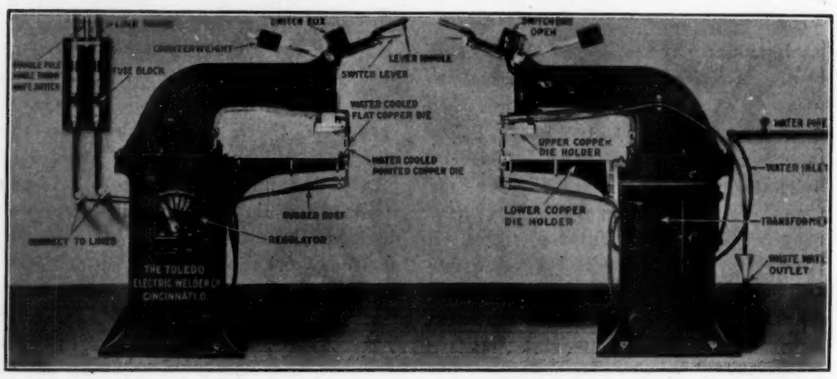


FIG 11—CONSTRUCTION OF TOLEDO SPOT WELDER FOR WELDING STOVE PARTS

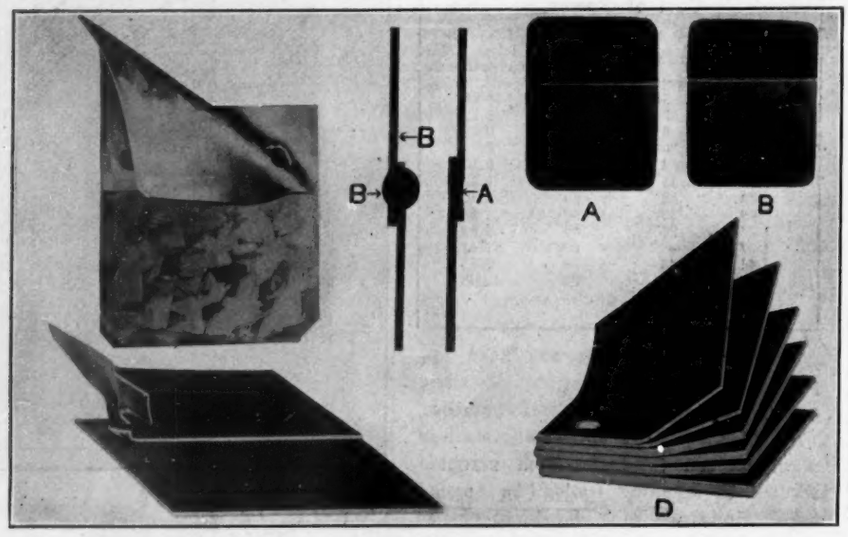


FIG. 10—SAMPLES OF VARIOUS WELDS

Fig. 9 shows the manner in which the No. 14 welder is used for electrically riveting sheets for stove parts. The total height of the machine is 60 inches and occupies a floor space 31 x 24 inches, while the height to the dies is 42 inches. The head has a vertical travel of 1 15/16 inches and the distance between the heads, closed, is 4¾ inches. Two sets of dies are used with the welder, one to go in the extreme front and the other die to go on the right or left of the end to make a weld in corners. Fig. 10 shows sheets of various thicknesses electrically spot-welded. At A and B are shown sheets spot-welded and riveted; D shows six pieces of various thicknesses welded together. Copper

and brass cannot be spot-welded, as they are very good conductors of electricity and offer practically no resistance to the flow of the current. It is impracticable to weld cast iron, as there is no fiber to stock of this kind, and the metal will easily tear out at the welded spots. Galvanized iron can be welded, but the zinc will burn off, leaving the iron exposed at the point where the copper dies come in contact with the metal. Heat has no effect on the electric weld, and for this reason the process is being rapidly adopted by stove manufacturers in the construction of sheet steel ranges and similar work.

There is a limit to the thickness of sheet metal that it is practical to spot weld. This is due to two reasons. It is necessary to have the two pieces of metal touch each other closely at the point where the weld is to be made. With very heavy stock, a slight buckling of the metal will prevent the flat surfaces from making

Table III

Gage.	Kilowatts.	Time in seconds	Cost per 1,000 welds, cents.
10	18	1.5	3.5
12	16	1.3	3
14	14	1.0	2.75
16	12	0.9	2.5
18	10	0.8	2.25
20	9	0.7	2
22	8	0.6	1.75
24	7	0.5	1.5
26	6	0.4	1.25
28	5	0.3	1

a good contact. The copper dies carrying the electric current can carry only a certain quantity of current without excessive heating at the point of contact with the metal. When sufficient current is carried through the die points to weld very heavy stock, they become very hot and soften so that the points wear away rapidly. Sheets of thickness up to and including ¼ inch can be welded readily. No preparation of the stock is required unless it is very rusty. In this case it is more economical to clean off the rust or scale by sand blast treatment. Sheets of any size can be welded by making a special form for the machine. The pieces welded need not be of the same thickness. On thin work two flat dies are used and no depression is left. In Fig. 10, at *A*, is a slight depression where the pointed welding die was used in forcing the work together. This depression is only 0.03 inch on stock 0.25 inch thick. The depression has a diameter of 0.25 inch for No. 20 gage stock and 0.375 inch for 0.25 inch stock.

With the spot welder from 30 to 50

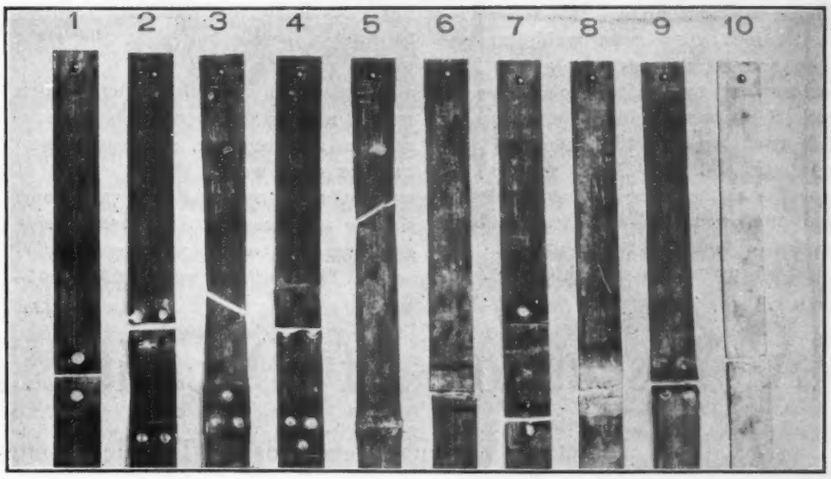


FIG. 12—TESTS OF WELDS AND RIVETED SECTIONS OF STEEL PLATE

welds are made per minute on No. 10 gage material. About 0.6 of a second is required to make a weld, as against 10 or 15 seconds by riveting. The cost of current is very low, not amounting to over 15 to 20 cents per 1,000 welds where current does not cost more than 5 cents per kilowatt-hour, which is practically the cost of the rivets. The great saving is in the time required in punching holes and inserting and heading the rivets. Table III gives the time, power and cost per 1,000 welds, with current at ¼ cent per kilowatt-hour, for welding Nos. 10 to 20 gage sheets.

Fig. 12 shows a numer of tests made on samples of steel plate all 1.12 inches wide, and of the same thickness. No. 1 was welded in one spot and broke at the weld at 1,623 pounds; No. 2, two rivets, broke at the rivets at 1,555 pounds; No. 7, one rivet, broke at the rivet at 990 pounds; No. 9, welded in two spots, broke at the weld at 2,275 pounds. A comparison of Nos. 1 and 2 shows that one spot weld will stand more than two rivets.

Figs. 1 to 8 inclusive show types of electric spot welders built for various special purposes. Fig. 1 is a special welder for spot-welding material from ¼ to ½ inch in thickness. The dies are built very large and it has a transformer capacity of 35 kilowatts. Fig. 3 is a foot-operated spot welder with a jaw opening of 1½ inches. At *A* is the step used for closing the welding dies and at *B* is the pedal operating the switch for throwing the current on and off. This leaves the operator's hands free to handle the work. Fig. 5 shows a

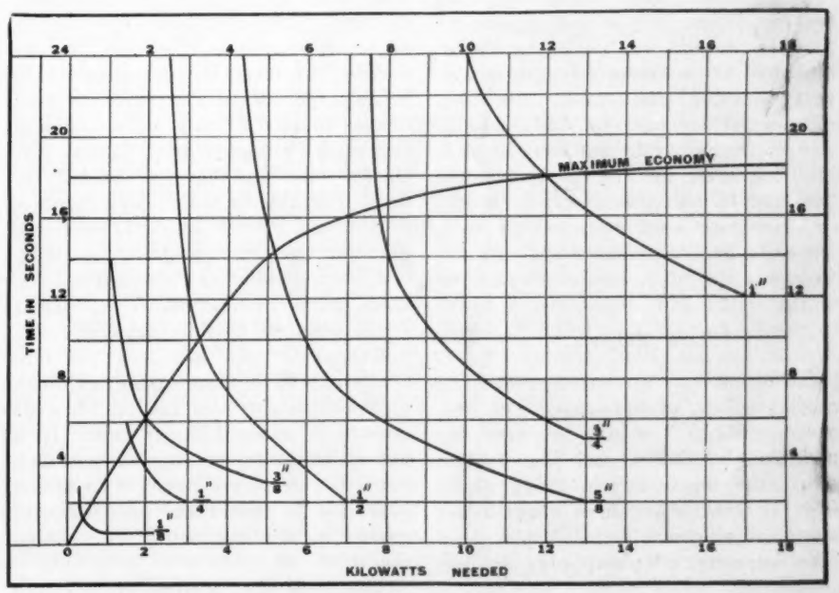


FIG. 13—CURVE, SHOWING THE POSSIBLE RANGE OF POWER AND TIME, WITH MAXIMUM ELECTRICITY USED FOR WELDING ROUND IRON BARS FROM ⅛ to 1 INCH IN DIAMETER

Thomson automatic sheave-welder which makes six spot welds at one time and 30 sheaves a minute. This welder has two water-cooled dies, *A* and *B*, between which passes a link belt running over the octagonal pulleys, *C* and *D*. The sheaves are placed on the carrying receptacles *E* and are removed at *F* after being welded between the dies at *T*. All welding operations are automatic, being operated by power supplied through a single pulley at the right of the machine. Fig. 6 is a vertical, semi-automatic ferrule-welder which makes a row of spot welds in succession and requires about one second for each weld. With the cost of current at 1 cent per kilowatt hour, the cost of current for these welds is from 2 to 6 cents per 1,000 welds. The machine weighs 600 pounds and has a transformer capacity of 10 kilowatts. Fig. 8 is a standard, vertical, semi-automatic, punch press, spot-welder of 30 kilowatts capacity, adapted for general work. Fig. 2 shows a narrow throat spot welder; Fig. 4 is a vertical, semi-automatic welder for welding hose or wire reels; Fig. 5 is a vertical, semi-automatic sheave welder and Fig. 7 is a standard type of vertical welder.

A Discussion of Ductility in Rail Steel[1]

Effect of Various Metalloids on Tensile Strength — Half-Moon or Crescent Breaks in Rails — Great Increase in Wheel Loads

By P. H. Dudley

The phrase *Ductility in Rail Steel* does not, as often supposed, express equal physical properties in metal for rails of different chemical composition or different methods of fabrication, and for different conditions of service. Bessemer steel rail sections of high phosphorus, even with low carbon content, are more fragile in the distribution of rapid large bending moments than the low-phosphorus, medium carbon steel of basic open-hearth rails. There is also a marked difference in the freedom from fractures under similar service between brands of steel made under the same specifications. Rails which are satisfactory in warm climates fracture more frequently in colder climates.

Iron forms the economic basic element of steel, its ductility being modified by the metal, manganese and the metalloids, carbon and silicon, to produce an alloy of double the elastic limit and the ultimate strength of the best wrought iron rails. The iron rails were adequate for the installation of the railroads, but were so rapidly impaired by the equipment of 1860 and 1870 that they were replaced by Bessemer steel rails, which have since rendered possible the present extensive railway systems of the world.

Low Sulphur.

Owing to the exhaustion of the available low phosphorus ores, Bessemer rail steel is now of necessity a high phosphorus and low carbon alloy, the mean carbon being about 0.50 per cent, manganese about 1 per cent, and silicon 0.10 to 0.20 per cent.[2] The impurity of phosphorus is limited to 0.10, while that of sulphur was limited formerly to 0.075 or 0.08 per cent. The manufacturers this year charged for this limitation of sulphur 5 cents extra per hundred pounds and it has been omitted from most specifications, though it is generally required that its content be reported.

Plain basic open-hearth rail steel is usually a low phosphorus and medium, unsaturated carbon alloy, as most of the phosphorus has been reduced by this process from its content in the ores and iron to 0.04 per cent or under. This permits, in this class of steel rails, carbon of 0.63 to 0.75 per cent in combination with the same percentage of manganese and a silicon content of 0.10 to 0.20 per cent.

The metalloid, carbon (under 1 per cent) when alloyed with iron increases its tensile strength, but, as would be expected, lessens at the same time its ductility by increasing its viscosity to strains, yet does not increase its brittleness rapidly so long as the mineral aggregates elongate after passing the elastic limit and have a decided reduction of area at the necking or point of fracture. Steel which is rendered granular from any condition of chemical composition or fabrication partakes more of the nature of brittle solids than of ductile tough alloys.

Manganese also increases the tensile strength of the metal, although to a less extent than carbon when its amount is under 1.25 per cent. It is not an impurity, as frequently stated, but is a necessary element in oxidation processes to reduce the percentage of oxides in the completion of refining the steel.

Silicon is also a requisite element to increase the solidity of the metal, and in the small percentages which obtain in Bessemer or basic open-hearth steel, it adds little if any to the tensile strength of the alloy.

Phosphorus is an embrittler, especially with high carbon. It increases the viscosity of the steel and reduces its capacity to distribute rapid strains or those of large magnitude before fracture occurs, particularly in low temperatures. Therefore, when as much as 0.1 per cent of this impurity is present the percentage of carbon must be limited for Bessemer rail steel practically to 0.5 per cent, with the necessary manganese. Phosphorus, it is said, may exist in rail steel in two or more compounds, one not being considered harmful to the steel. Several investigations have indicated the same result, but have not disclosed any direct method of fabrication to control the harmfulness of a part of or the entire phosphorus content. It is, therefore, considered best to reduce the total phosphorus in the ores in this country by the basic open-hearth process, and to replace the embrittling properties of a large content of phosphorus by a higher percentage of carbon. This enables the metal to withstand greater tensile and impact strains and distribute them in the rail section as a girder in a shorter time without fracture than is possible for the Bessemer metal with the higher phosphorus content.

Effect of Sulphur.

Sulphur is an impurity and renders the metal hot short in rolling, producing checks and cracks, while the greater portion of the sulphur unites with the manganese forming manganese sulphide, which is occluded by the metal as a foreign substance, preventing its welding, and breaking up the continuity of its structure. Silicates which should have escaped from the

[1]Presented at the annual meeting of the American Society for Testing Materials.
[2]The chemical compositions refer in all cases to 100-pound rails.

bath of molten metal are also often occluded in the steel. These defects often become the incipient points of detailed fractures due to the gradual deformation of the section by the repetitions of passing wheel loads.

Test butts from Bessemer rail steel, carbon, 0.50 per cent; manganese, 0.90 to 1.10 per cent; phosphorus, about but under 0.10 per cent, and silicon, 0.13 to 0.15 per cent, show, under the drop testing machine, a range of ductility from 6 to 18 per cent, although the majority of the tests give from 10 to 18 per cent. There are some heats or groups of heats in which the ductility drops to 5 or 6 per cent and in which the butt breaks under a second blow.

Test butts from basic open-hearth rails, carbon, 0.63 to 0.75 per cent, with about a similar content of manganese; phosphorus, 0.04 per cent or under, and silicon, 0.15 to 0.20 per cent, usually show, under the drop testing machine, a range of ductility from 6 to 18 per cent, while an occasional melt gives 20 or 25 per cent. Twenty thousand tons of special basic, open-hearth, supersaturated steel rails, carbon 0.80 to 0.90 per cent, and phosphorus under 0.03 per cent, with a small percentage of titanium added in the ladle, which have been rolled recently, show a ductility of 6 to 18 per cent and are now in service. The rails seem tough as a girder, and abrasion tests indicate that they will show great resistance to flange abrasion on curves.

New York Central Tests.

Melts of open-hearth rails for the New York Central Lines contain from 10 to 24 ingots and make from 90 to 180 rails. Three butts are tested from different ingots of each melt; one is from the second ingot teemed, one from the middle of the melt, and a third from the ingot before the last one poured. To pass the melt each butt must show a ductility of at least 5 per cent in two consecutive inches upon the base or of 6 per cent in 1 inch, while in one butt the ductility of the steel is totally exhausted. The butts for this record are selected in rotation from the different ingots and the range for the melts is thus ascertained. The tests, as a rule, indicate that the ductility is quite uniform for each melt. The exceptions can usually be traced to colder rolling, differences in heating, and sometimes to brittleness of the metal itself.

The size and weight of the ingots for open-hearth steel vary at different mills. The smallest ingot for a three-rail length of 100-pound section weighs 3,934 pounds. The ingots for six-rail lengths of 100-pound section at another mill weigh 8,200 pounds. The ingots at a third mill weigh 12,500 pounds each and after more than a 20 per cent discard are bloomed for eight 100-pound rails, cut in two-rail lengths and reheated before rolling. These large ingots, with nearly 60 reductions in size to that of the section of the rail, receive so much mechanical work upon the metal that the effects of the carbon are intensified and the ductility is reduced 2 or 3 per cent below that of rails of similar composition from smaller ingots. The slightly reduced ductility will give greater resistance for curve abrasion and still be sufficient for the section as a girder.

Crescent Breaks.

The ductility of ferro-titanium Bessemer rails, with 0.1 per cent of metallic titanium added to the bath, carbon 0.60 to 0.70 per cent; manganese, 0.40 to 0.70 per cent, though usually confined under 0.60, and silicon 0.10 to 0.18 per cent, ranges from 6 to 15 per cent, showing a decided softening of the effect of the phosphorus content by the titanium and lower manganese. These rails are now to be submitted to extensive service tests to see whether or not the expected benefits will be secured in practice.

The value of 8 to 12 per cent ductility in rail steel may be modified considerably in the fabrication of the rails by the checking of the columnar structure in blooming, producing large percentages of second quality rails. These checks do not roll out completely, and while many rails are rejected, some checks under the scale are invisible in the base of the rail and weaken it transversely, thus losing in effect the ample ductility intended by the chemical composition. It has been found that under high speed trains of heavy wheel loads the half-moon or crescent breaks which occur in the base of the rail start from these incipient checks in the metal near the center of the base and in low temperatures generally develop as detailed fractures. When the seconds run from 5 to 15 per cent of the output, this type of break occurs in rails in which the checks were so minute as to be invisible, and, therefore, escape detection in the rails at the mills.

The metal in the present blooming trains does not crack or check as much in the upper part of the better deoxidized open-hearth or Bessemer ingots as it does under the first heavier drafts for the lower and larger part of the ingots. The checks have not occurred to as marked an extent in the open-hearth ingots, making only 1 or 2 per cent of seconds, as formerly in the Bessemer ingots, for the reason that the purer open-hearth metal is not as hot-short as the less deoxidized, plain Bessemer metal. It is noticed, however, that in open-hearth rails the greatest number of seconds from some of the mills, even of the 1 or 2 per cent, are from the last rail in the ingot. While the mills are designed to produce rails, the differences in many of the details of furnace and mill practice have some influence upon the ductility which may be secured and utilized from a given composition of metal.

The New York Central & Hudson River and the Boston & Albany railroad companies have had a large experience concerning the requisite ductility of rails as girders to carry and distribute the wheel loads and also to resist flange abrasion upon curves under heavy traffic. Of the many thousand tons of Bessemer rails of 0.06 per cent phosphorus and 0.60 to 0.65 per cent carbon which I commenced to roll in 1891 and continued until the exhaustion of the low-phosphorus ores in 1902, 90 per cent were required to exceed a minimum ductility of 5 per cent per inch, as shown under the drop test, which in fabrication by the manufacturers was raised to 95 per cent. The maximum ductility was about 18 per cent and the average was over 12 per cent. The minimum ductility was 4 per cent per inch for acceptance of 10 per cent of the rails, though confined by good mill practice to 5 per cent of the output. The rails proved to be tough and but few fractures have occurred in service, while many are still in the tracks.

Requisite Ductility in Rails.

Six-inch, 100-pound rails made in 1894, after 16 years of service carrying 250,000,000 tons of traffic with a loss of less than 0.125 inch on the head, were tested early this year under the drop, base down on the supports. One butt gave 6 per cent elongation before it sheared through the bolt holes and a butt from another heat gave 8 per cent. The metal in the head of either rail, like thousands of others in the track, did not flow to the sides but wore uniformly, owing to the efficient support of the metal of high elastic limit underneath the bearing surface. The resistance to flange abrasion was excellent, rails lasting six to ten years upon three and four-degree curves under heavy traffic. Rails of the same sections containing 0.10 per cent phosphorus and 0.50 per cent carbon used to replace them, cut out upon the same curves in two or three years, although

there has been some increase in the traffic.

The minimum ductility of the metal has been raised from 4 to over 5 per cent per inch to insure malleability as well as ductility for the increased service under the present wheel loads and higher speeds. This is for the purpose of meeting the present decreased time factor in distributing the larger and more rapid alternating positive and negative bending moments in the rail as a girder under the moving wheel contacts of the heavier loads and higher speeds, particularly in freezing temperatures.

Increase in Minimum Ductility.

It has been instructive to note that new rail butts at 60 degrees Fahr. would withstand 2,000 pounds falling 16 feet. Similar butts at 0 degrees Fahr. would fail when an 8-foot drop was exceeded, yet under the 16-foot drop they showed by their curvature that a permanent set and about one-half of the elongation had occurred in the metal as found for a 16-foot drop before fracture. The cold had increased the viscosity of the metal; therefore its resistance to flow, combined with the reduced time factor for the distribution of the greater energy and speed of impact of the higher drop, started the rupture of the extreme fibers in the base of the rail before the stress could be distributed through the entire section, and fracture consequently took place. Similar conditions occur in the rails in the track which are deflected from the trackman's unloaded surface to the *general depression* under the total loads of the wheel bases of the locomotives or cars, with specific deflections in the rails under the passing wheel contacts.

The wheel loads of slow freight trains with a large time factor to distribute the stresses through the sections as girders, do not check or fracture as many rails as similar wheel loads run at higher speeds with greater generated wheel effects and with less time for their distribution through the rails to the cross-ties, ballast and roadbed. Oxidized flaws are often found in fractured rails, showing that a minute check had been caused by the maximum intensity of the wheel effect, but was so quickly relieved by the passing of the wheel that the rail was not completely fractured at the first occurrence. Broken rails have been found having in the base two distinct oxidized checks, which had occurred several months apart and not until a third excessive wheel load at some subsequent date was the rail completely fractured. There are also many fractures which show that the impact of the passing wheel was so quick and great as to render ductile metal fragile without exercising its ductility in the least. This has led to a general investigation of the relations of the passing equipment to the rails and roadbed, as it is their combination which forms the means of transport.

The wheel loads have been more than doubled and the tonnages quadrupled since the invention of Bessemer steel for rails. Steel-tired, 33 and 36-inch wheels have replaced those formerly of chilled cast iron for safety under heavy loads and high speed trains. This change has replaced a non-plastic metal of great resistance to compression, though sensitive to shocks, by a metal with elastic and plastic properties of greater toughness to impact, although subject to all the laws of fatigue and deformation of such alloys. The tonnage upon the single point of contact of a wheel on the rail repeats itself upon all metal in the center of the tread for each rotation. A 36-inch wheel makes 560.2 revolutions per mile and for a static load of five tons is equivalent to 2,801 tons per mile. A run from New York to Chicago makes a total of over 2,700,000 tons applied upon every portion of the center of the tread exclusive of any generated wheel effects. A 36-inch tender wheel with an average static load of nine tons applies 5,042 tons per mile to every portion of the center of the tread, or 756,000 tons for a three-hour run of 150 miles, exclusive of generated wheel effects.

Steel Tires.

It has not yet been possible for the tire manufacturers to supply the small tires with homogeneous high elastic limits for the entire circumference of the tread. The problem has not been solved to make all small tires sustain 100,000,000 to 150,000,000 tons without irregular deformation in one or more portions of the tread, which every revolution increases, one might say, in a geometric ratio. This produces an eccentric wheel capable of doing great damage at high speeds to the wheels and rails, particularly in low temperatures. It is often found that one wheel on an axle deforms while the metal in its mate maintains its rotundity through the uniform flow and wear of the steel in the wheel tread. The deformation of the metal is more rapid in wheels which run long distances than in those which make shorter runs and have more frequent intervals of rest, there being evidently some recovery from the fatigue of the metal.

More attention will be imperative in the future for transporting heavy loads at high speeds to maintain the drivers and wheels in the treads as true circles, in order to prevent the generated wheel effects becoming too excessive to distribute millions of repetitions of loads without exceeding the ductility in rail steel.

Book Review

Iron Ore Manual, Lake Superior District.—By Rukard Hurd, 162 pages, 6 x 9 inches. Price $7.50, postpaid. F. M. Catlin, 510 Capitol Bank building, St. Paul, Minn., sales agent.

In the preparation of this manual, Mr. Hurd, who is the efficient secretary of the Minnesota Tax Commission, has done an immense amount of work, and is entitled to credit for earnest effort to elucidate and make more generally understood the method of determining ore values for the Lake Superior region. This much must be conceded, regardless of what value one may place upon some features of the book. Mr. Hurd devotes a large part of his explanations and tables relating to prices, premiums and penalties of the Lake Superior ores. Seventy-six pages of his book are devoted to tables of ore prices. While the book has been received in a kindly spirit by the Lake Superior iron ore interests, few, if any, practical ore men have shown a disposition to use the tables in their daily work, and we are of the opinion that Mr. Hurd and some reviewers of the book will be disappointed in the limited use which it will find. Mr. Hurd has an interesting chapter on the valuation of iron ore by the Minnesota Tax Commission, showing the remarkable increase in assessment from 1906 to 1910 without much opposition being encountered. Numerous tables showing iron ore shipments, prices, rail freights, iron ore receipts at Lake Erie ports and Lake Erie stock piles and other information, for much of which the author gives credit to other publications, are included. There is also a chapter on the geology and mineralogy of the Lake Superior iron district. The book has a vast amount of facts in convenient form, and a map showing the Lake Superior iron ranges.

The stockholders of the Perfection Spring Co., Cleveland, will hold a meeting on July 31, to consider increasing the capital stock from $200,000 to $500,000.

The Works of the Indiana Steel Co. at Gary[1]

Description of the Continuous Sheet Bar Mill, Which Forms an Extension to the Billet Mill—Annual Capacity of Mill, 480,000 Tons

When the new plant now being built by the American Sheet & Tin Plate Co., at Gary, Ind., is placed in operation, it will be necessary for the Indiana Steel Co. to supply it with sheet bars. To take care of this demand, a motor-driven, continuous sheet bar mill has recently been added to the continuous billet mill at the Gary works. It has an annual capacity of 480,000 tons, but it will be several years before the mill is called upon to deliver its full rated output.

The continuous billet mill at the Gary works was described in detail in THE IRON TRADE REVIEW, Oct. 21, 1909. The blooms from which the sheet bars are made are finished by the 24-inch continuous blooming mill, which is a part of the billet mill, and are delivered to a transfer table, where they are carried by chains to a set of live rollers, constituting the approach table to the sheet bar mill. The location of the transfer table is shown in Fig. 2. It is 80 feet long and 57 feet wide. Before reaching the first stand of rolls, the blooms pass through a Morgan flying shear which may be used to shear them when necessary. The sheet bar mill itself consists of eight consecutive, two-high stands driven through bevel gearing by a 6,000-horsepower motor. The mill and bevel gear drive were designed and built by the Morgan Construction Co., Worcester, Mass. Upon leaving the last stand of rolls the sheet bars pass through a steam flying shear to a cold runout table provided with a set of pinch rolls and a suitable bar piler or receiving cradle at its outer end.

The blooms are 7½ inches wide by 4.4 inches thick. The sheet bars are rolled to the standard width of 8 inches and may be varied in thickness from ⅞ to 1¼ inches. The reduction in rolling is fairly uniformly graduated throughout the eight passes.

Flying Bloom Shear.

The Morgan flying bloom shear, which is placed between the approach table and the first stand of rolls, is driven through spur gearing from the shaft leading to the first roll train. The flying shear is brought into operation by means of a jaw clutch on its main shaft, controlled by a lever situated in the gangway near the roll stands. It is designed to cut 35 square inches of steel at one stroke. It is built from the standard designs of the Morgan Construction Co., Worcester, Mass. The knives are connected to differential eccentrics and both the upper and lower knives move, resulting in a true shearing action which does not interfere with the alignment of the moving bloom. This shear, of course, is only used to crop the ends of blooms or in case a cobble or other emergency interferes with the proper operation of the mill.

Fig. 2 shows clearly the arrangement of the roll stands, pinions and the bevel gear drive. The first six passes are closed and the last two are through plain rolls. The pitch diameter of the rolls in the first train is 18½ inches and in the seven succeeding trains it is 18¾ inches. Looping tables are placed between the third and fourth, fourth and fifth, fifth and sixth, and seventh and eighth stands. Any slack in the bar is forced into a vertical loop by swinging arms on the looping tables. The construction of the roll housings, pinions, rolls, spindles, etc., is standard in every respect.

The following table gives the distances from center to center of the various stands:

	Feet.	Inches.
From center of last approach table roller to center of flying shear	6	1
From center of flying shear to stand No. 1.....	5	0
Stand No. 1 to stand No. 2.	10	10
Stand No. 2 to stand No. 3..	10	6

[1]Other articles describing the works of the Indiana Steel Co. have been published in THE IRON TRADE REVIEW, as follows: Vol. XLIV—Blast Furnace Equipment, p. 65; Blowing Engines and Power Plants, p. 271; Open-Hearth Plant, Soaking Pits and Rail Mill, p. 619; Auxiliary Shops, p. 840. Vol. XLV—Continuous Billet Mill, p. 701. Vol. XLVII—Axle Mill, p. 591. Vol. XLVIII—Merchant Mills, p. 501; New Gary Works of the American Bridge Co., p. 953; 60-Inch Universal Plate Mill, p. 1205.

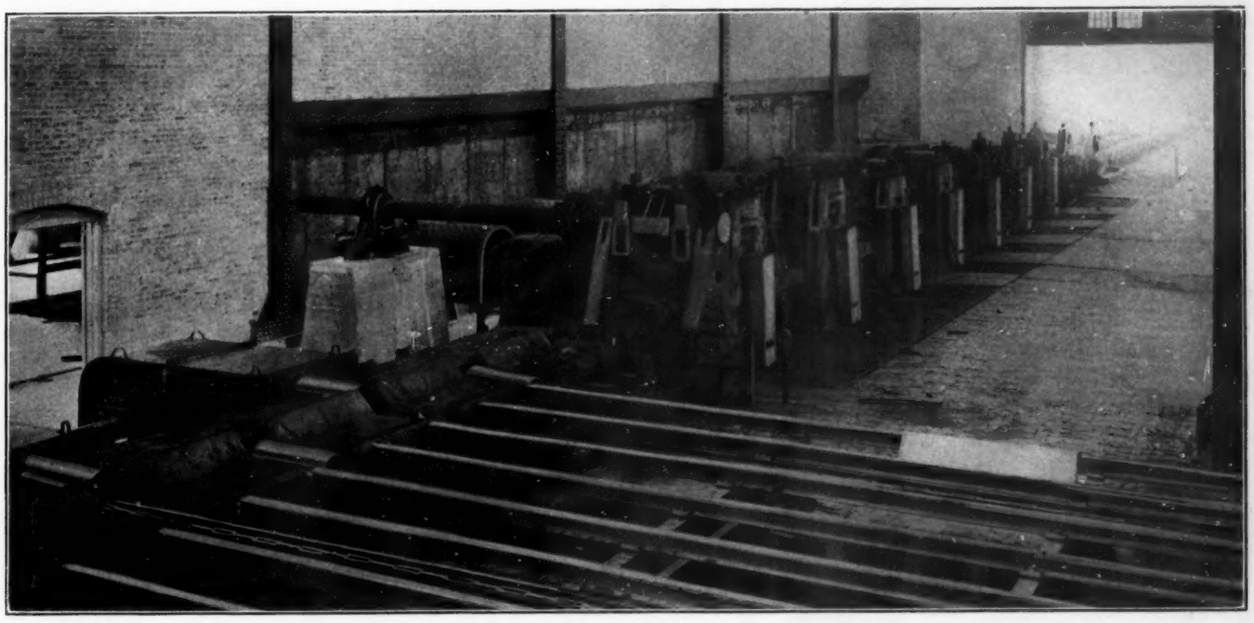


FIG. 1—GENERAL VIEW OF THE ROLL STANDS OF THE GARY CONTINUOUS SHEET BAR MILL

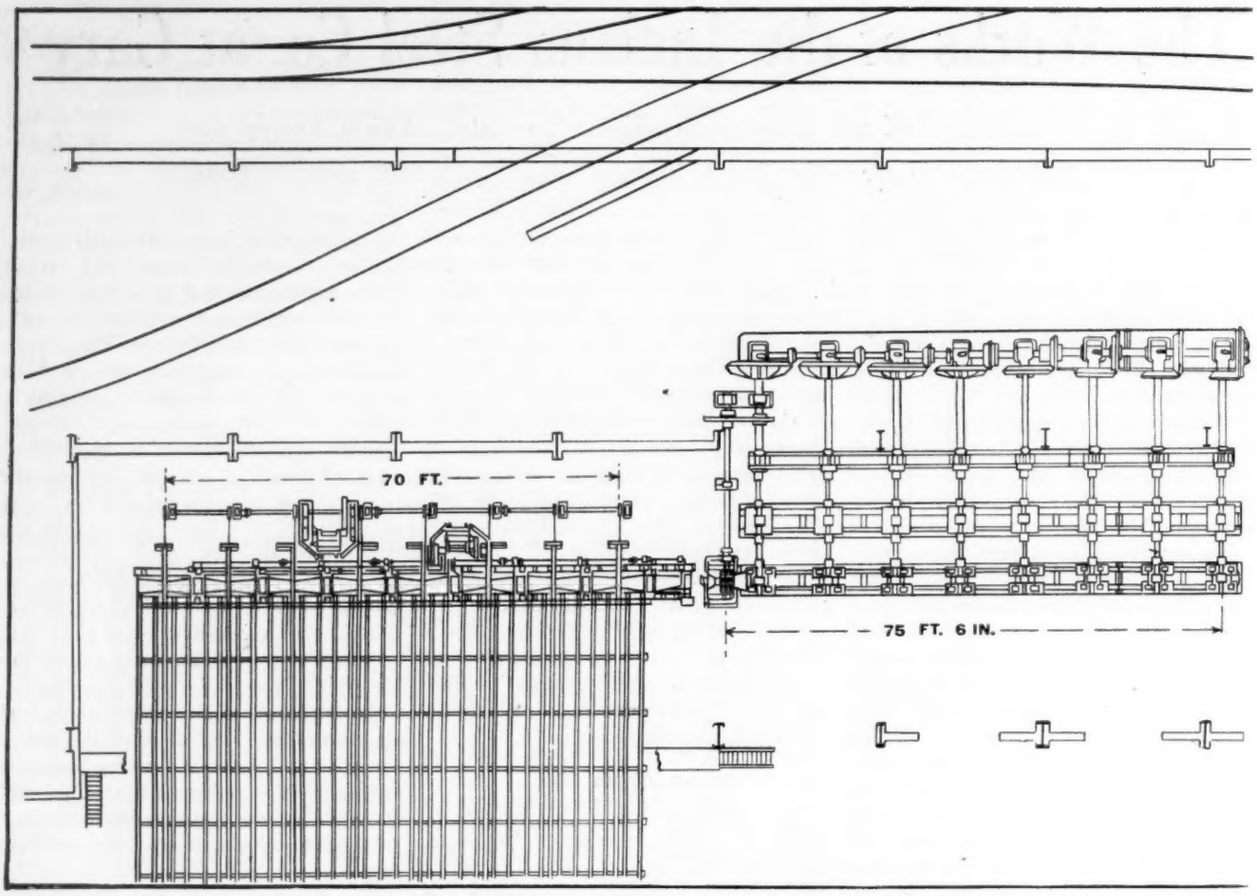


FIG. 2—GROUND PLAN OF THE MOTOR-DRIVEN CONTINUOUS SHEET BAR MILL, BUILT BY THE INDIANA STEEL CO. AT GARY,

Stand No. 3 to stand No. 4, stand No. 4 to stand No. 5, stand No. 5 to stand No. 6, stand No. 6 to stand No. 7, and stand No. 7 to stand No. 8, each.....	10	0
Total length of mill from center of flying shear to center of stand No. 8.....	76	4

The distance between the center line of the mill tables and the center line of the pinion housings is 9 feet 1 inch, and from this point to the center of the main motor shaft the distance is 25 feet 2 inches. The mill and drive, therefore, occupy an area 76 feet long and 34 feet wide. The mill is served by a 20-ton, 40-foot span Alliance crane, and the motor room is served by a 50-ton, 40-foot span Alliance crane. A 100-foot girder, which carries the mill crane runway over the transfer table, was erected while the mill was in operation.

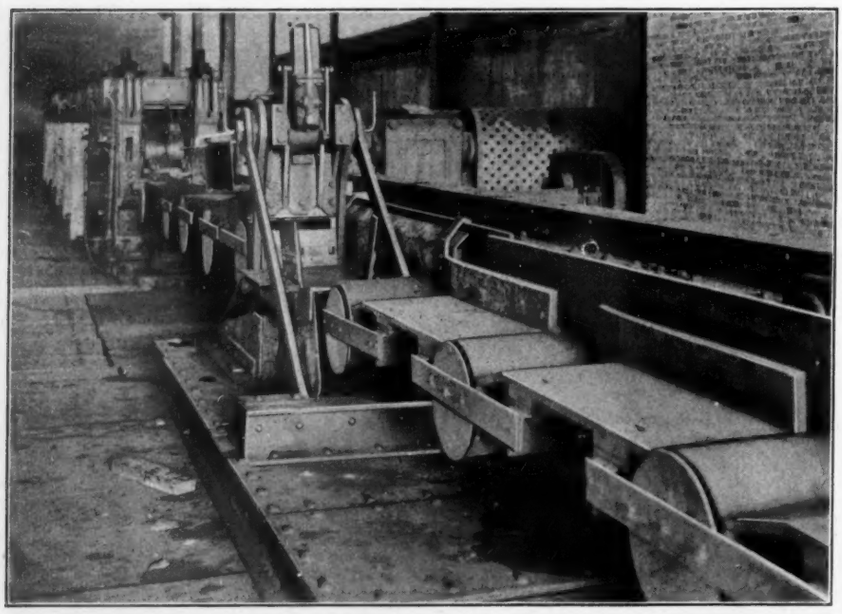
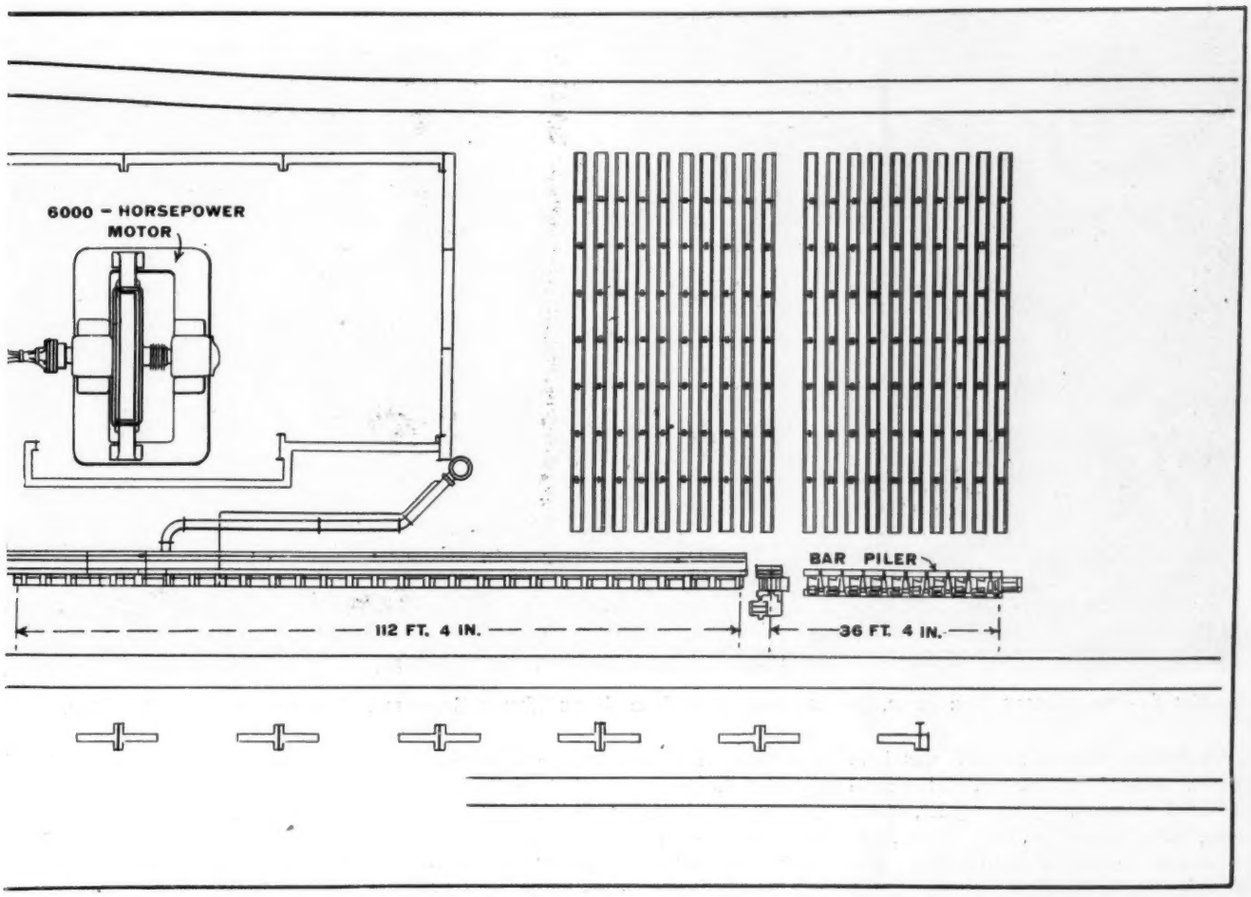


FIG. 3—THE MORGAN STEAM FLYING SHEAR, SHOWING THE ROLL STANDS IN THE BACKGROUND

Steam Flying Shear.

After leaving the eighth stand of rolls, the sheet bars are cut to 30-foot lengths in a Morgan steam flying shear. As is well known, the motion of this shear is controlled by a differential piston so arranged that all the energy of the steam in the cylinder is brought into play at once. The operation of the shear is automatic. The sheet bars trip a switch set at any desired distance from the shear and this switch electrically operates a steam valve which puts the shear in motion. While the arms of the shear move forward with the sheet bar the jaws clip the piece in two; the arms then return to their original position.

The main motor is set with its shaft



IND., SHOWING THE GENERAL ARRANGEMENT OF THE COOLING BEDS, ROLL STANDS, MOTOR DRIVE, BEVEL GEARING, ETC.

parallel to the mill tables and the various trains of rolls are driven through bevel gears. The gears, Fig. 6, are of cast steel with teeth cut to 4½ inches circular pitch. The number of teeth in each set of gears and the speed of each train of rolls in revolutions per minute are as follows:

Pass No. 1.—Eighteen-tooth pinion meshing with a 90-tooth gear; roll speed, 16.3 revolutions.

Pass No. 2.—Twenty-two-tooth pinion meshing with an 85-tooth gear; roll speed, 21.1 revolutions.

Pass No. 3.—Twenty-eight-tooth pinion meshing with an 81-tooth gear; roll speed, 28.2 revolutions.

Pass No. 4.—Thirty-six-tooth pinion meshing with a 75-tooth gear; roll speed, 39.1 revolutions.

Pass No. 5.—Forty-four-tooth pinion meshing with a 65-tooth gear; roll speed, 55.2 revolutions.

Pass No. 6.—Fifty-two-tooth pinion meshing with a 56-tooth gear; roll speed, 75.7 revolutions.

Pass No. 7.—Sixty-one-tooth pinion meshing with a 40-tooth gear; roll speed, 124 revolutions.

Pass No. 8.—Sixty-five-tooth pinion meshing with a 41-tooth gear; roll speed, 129 revolutions.

The greatest increase in speed, 48.3 revolutions, is between passes 6 and 7, and the minimum increase is between passes 1 and 2, or 7 and 8, where it is practically five revolutions. The speed of rolling through the final pass is approximately 626 feet per minute. On this basis it requires 1 minute and 20 seconds to roll a bloom weighing 8,500 pounds. The capacity of the mill is, therefore, approximately 120 tons per hour, or, allowing for natural delays, 1,600 tons per day.

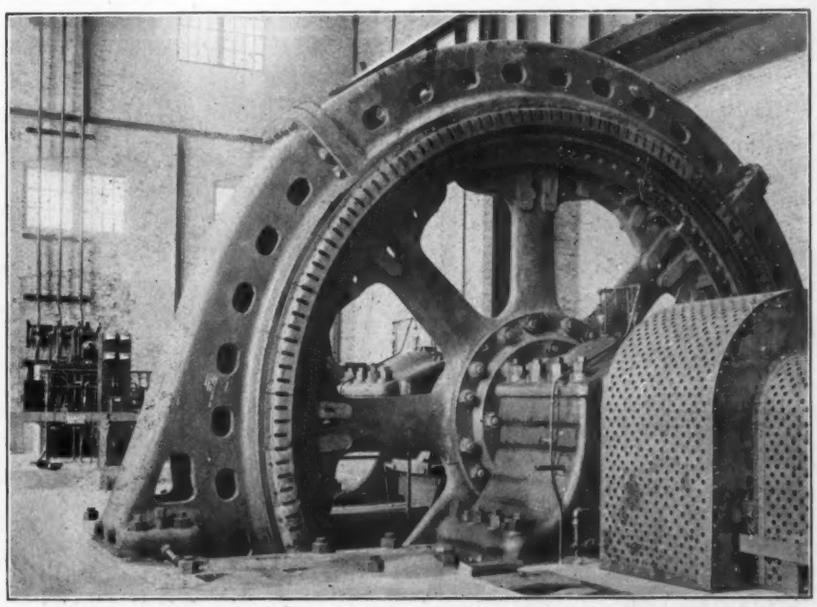


FIG. 4—THE 6,000-HORSEPOWER GENERAL ELECTRIC MOTOR WHICH DRIVES THE GARY SHEET BAR MILL; THE SHAFT AND COUPLING ARE PROTECTED BY A GUARD

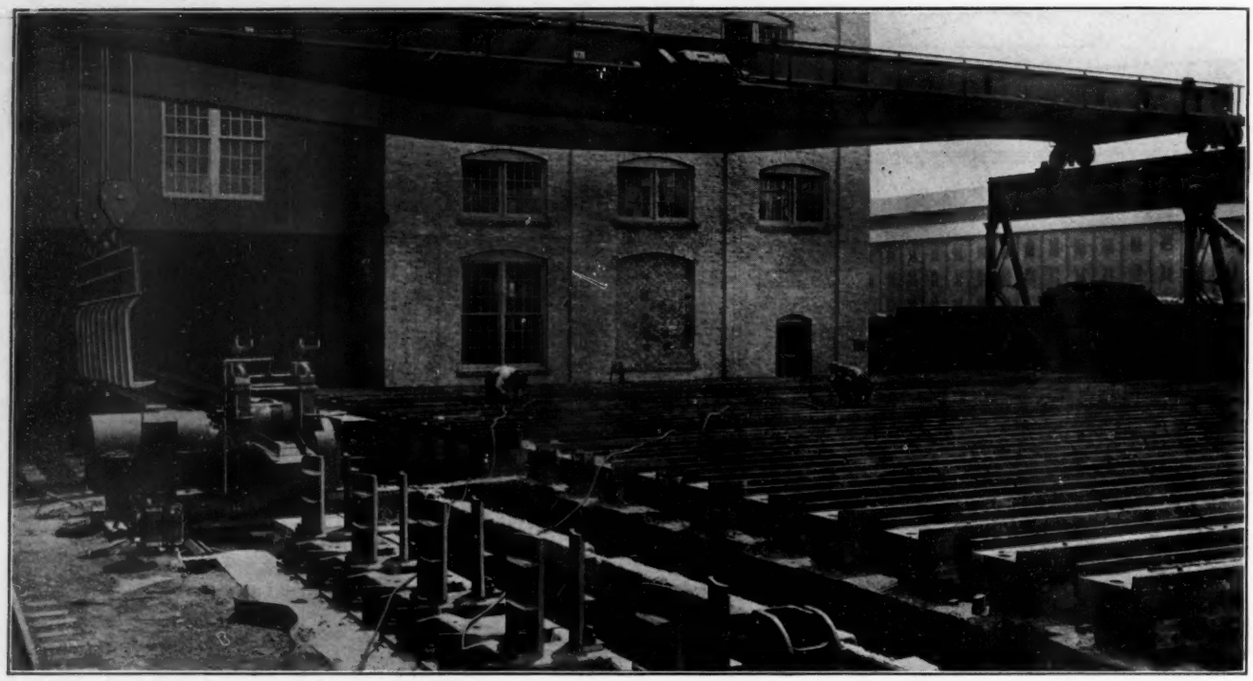


FIG. 5—PINCH ROLLS, BAR PILER, COOLING BEDS AND YARD CRANE WHICH SERVE THE CONTINUOUS SHEET BAR MILL

The motor driving the mill was built by the General Electric Co. and is rated at 6,000 horsepower, 25 cycles, 6,600 volts, 81½ revolutions per minute. It is similar in general design and construction to the 6,000-horsepower motors in the rail and billet mills which have been described in previous issues of THE IRON TRADE REVIEW.

The runout table between the last train of rolls and the pinch rolls is 84 feet 2 inches in length. It is of standard design and is driven through spur and miter gears from the spindle of the last train of rolls. Change gears are provided so the speed of the table rollers may be adjusted to the speed of the roll train in which the bar is finished. The pinch rolls and bar piler, Fig. 5, were built by the Pencoyd works of the American Bridge Co. The rolls are driven by a Westinghouse variable speed motor, which has a range of from 560 to 1,120 revolutions per minute. The pinch rolls are used merely to give the bars sufficient momentum to properly enter the bar piler. This device, as shown in Fig. 5, consists simply of a series of upright castings forming a cradle in which the bars are piled to a depth of from 1 to 2 feet, when they are lifted out by the yard crane and placed on the cooling beds.

The cooling beds shown in Fig. 5, consist of a series of brick piers capped with cast iron shoe plates. Each pier is 18 inches wide, four feet high and 58 feet long. The distance from center to center of outside piers in each bed is 30 feet and there is a five-foot alley or passageway between the two beds. A stan-

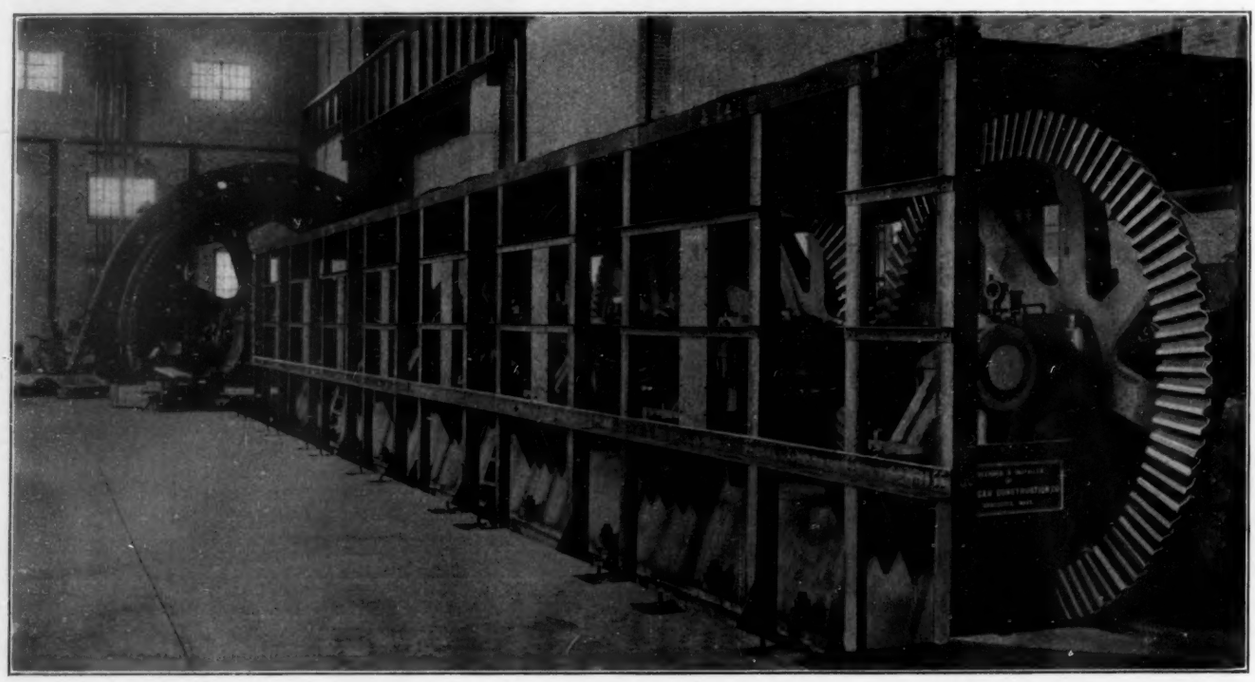


FIG. 6—THE BEVEL GEAR DRIVE, BUILT BY THE MORGAN CONSTRUCTION CO.

dard gage track skirts the south side of the beds. Both the track and the cooling beds are spanned by a 20-ton double drum Alliance traveling yard crane. This crane is equipped with a fork for conveniently handling piles of sheet bars.

As indicated by the foregoing description, this mill is very simple in its general design and layout and for this reason its great capacity is not readily appreciated by a superficial inspection. But, as suggested, it can easily absorb one-third of the rated output of the continuous billet mill.

Generating Oxygen and Hydrogen Electrolytically

To obtain the best results in welding, cutting or other operations involving the use of the oxy-hydrogen or oxy-acetylene flame, it is essential that the gases used should be of the purest character. Oxygen, which contains the least impurities, is the most economical, as it is the most effective. If it contains any portion of inert gas, such as nitrogen or chlorine, the per cent of efficiency will be greatly reduced for every per cent of such impurity. The International Oxygen Co., whose plant is located at Waverly Park, Newark, N. J., owns the American rights for gas-producing appliances of two large French concerns and the oxygen and hydrogen produced by this system is free from impurities, and as the gases are made electrolytically, they can never contain either chlorine or nitrogen. Therefore, when this oxygen is combined with pure acetylene or hydrogen, it will give a flame of maximum efficiency.

The International Oxygen Co.'s system for producing oxygen and hydrogen consists of a group of oxy-hydrogen generators, each generator being an electrolytic cell, which, by the aid of electric current, decomposes water into its constituent elements, oxygen and hydrogen. As water is made up of one part of oxygen and two parts of hydrogen, the hydrogen is set free simultaneously with the oxygen and both of these gases become immediately available. As the gases are being separated from the water they show opposite electrical properties. The oxygen is always formed at the positive pole of the generator and the hydrogen at the negative pole. One of these generators is shown in Fig. 1. An iron tank serves as the negative pole and from the cover of this tank are suspended a hydraulic joint and a perforated tank which serves as the positive pole. This perforated tank is shown in the cross-section, Fig. 2. By means of an asbestos sack suspended from the hydraulic joint, two separate compartments are formed. Through an opening in the cover a solution of water with alkali is poured into the hydraulic joint and distributed in the two compartments. When current is sent into the generator, oxygen immediately forms on the walls of the inner tank and hydrogen on the walls of the outer tank. The two gases are thus produced in separate compartments and are, therefore, absolutely pure. As a further check against any possible mixing of the gases, the asbestos sack, when impregnated with the alkali solution, forms an effective wall between the two gases. The hydraulic joint automatically adjusts the inner working of the generator. The oxygen and hydrogen do not pass directly from their respective compartments to the off-take pipes, but first bubble through the water placed in the lanterns attached to the cover of the generator. By means of these lanterns, the operation of the generator can be seen at a glance.

A plant for the production of these generators, made up of a group of units, is exceedingly flexible, as the cells can be arranged to meet almost any conditions. A group of generators may contain only sufficient units for one torch or it may be large enough to generate thousands of feet of gas. One kilowatt-hour of current will produce about three cubic feet of oxygen and six cubic feet of hydrogen. Each unit requires about two volts and from 300 to 400 amperes. The quantity of gas obtained is proportionate to the amperes used. With about 350 amperes, about 65 cubic feet of oxygen and 130 cubic feet of hydrogen are obtained daily. In addition to the electric current, the only other material required in the opera-

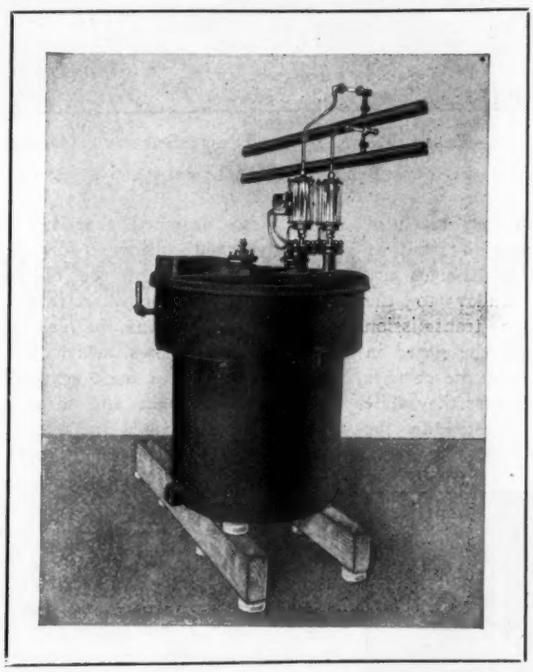


FIG. 1—CELL FOR GENERATING OXYGEN AND HYDROGEN BY THE ELECTROLYTIC PROCESS

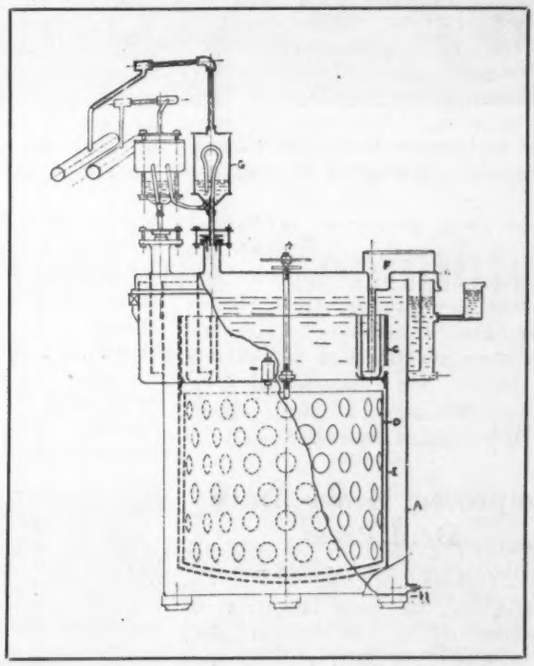


FIG. 2—SECTIONAL VIEW OF OXYGEN AND HYDROGEN GENERATOR

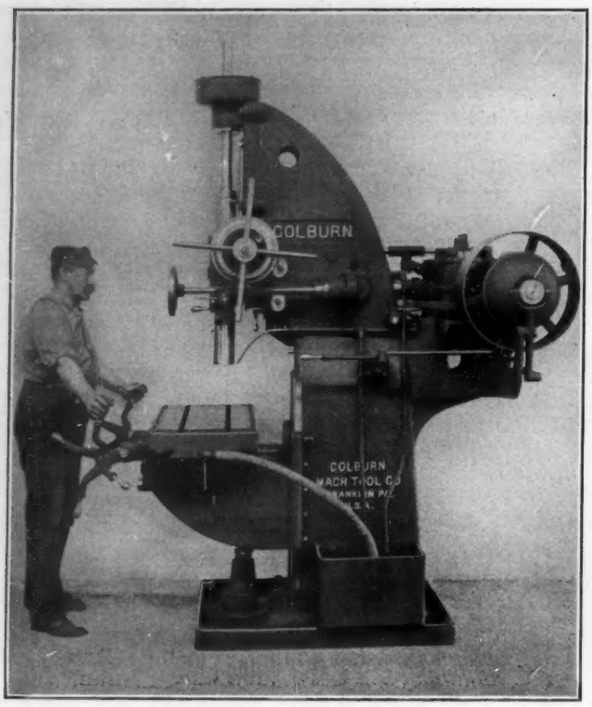


FIG. 1—IMPROVED HEAVY DUTY DRILL PRESS, BUILT BY THE COLBURN MACHINE TOOL CO.

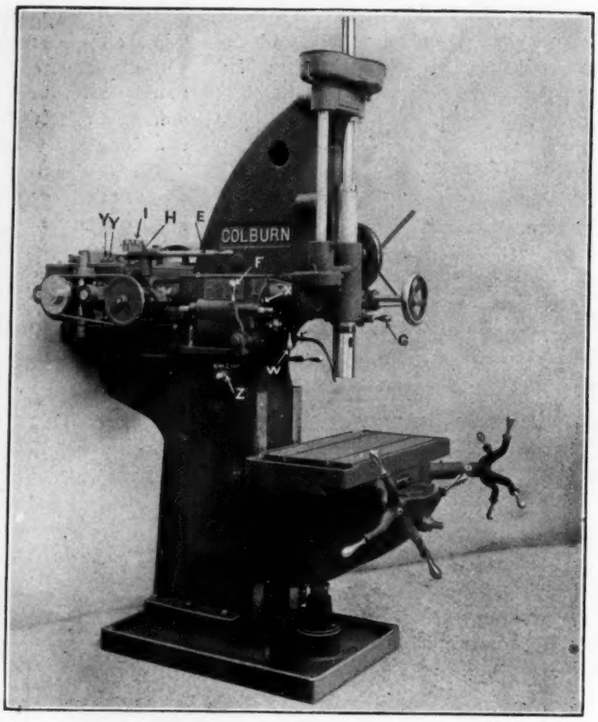


FIG. 2—HEAVY DUTY DRILL PRESS, SHOWING OPERATING LEVERS

tion of these generators is distilled water. It requires only one-hundredth of a gallon of water to produce one cubic foot of oxygen and two cubic feet of hydrogen. In addition to manufacturing these generators at its Waverly Park factory, the International Oxygen Co. will also produce oxygen and hydrogen in cylinders.

Improved Heavy Duty Drill Press

The Colburn Machine Tool Co., Franklin, Pa., has made important improvements on its line of heavy duty drill presses. The first machines were equipped with a right-angle drive, that is, the main driving shaft was at an angle of 90 degrees to the line shaft, which necessitated the use of quarter turn belts when a number of machines were set in a row and driven from one line shaft. On the re-designed machine, the main driving shaft in the speed box, on which is mounted the driving pulley, is placed parallel to the line shaft. This permits any number of machines to be erected side by side and to be belted with straight belts direct from one line shaft. The speed box is of an entirely new design. It is mounted upon a substantial extension or knee at the rear of the main column and eight changes of speed may be obtained through sliding gears and positive clutches. All speed changes are made with the two levers, *E* and *Z*, Fig. 2, which are within easy reach of the operator while standing in front of the machine. Four speed changes are made with lever *E*, similar to the changes with a selective transmission on an automobile. All of the gears in the speed box are steel and the corners of the teeth are beveled where they slide together. The gears subjected to the heaviest strain are hardened. The speed box is so designed that it forms a perfectly tight oil reservoir and the mechanism inside of the box is subjected to a bath of oil. A target, *I*, on top of the speed box, in plain sight of the operator, shows which gears are engaged. A set of back gears increases the speeds to eight and these are engaged and disengaged by lever, *Z*.

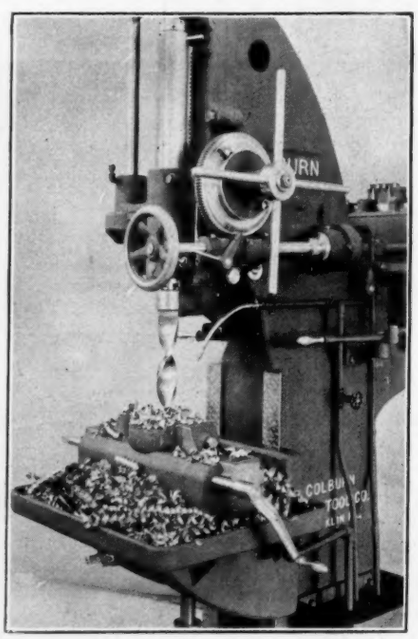


FIG. 3—HEAVY DUTY DRILL PRESS, PROVIDED WITH A TWO-JAW UNIVERSAL CHUCK

The machine is driven through a friction clutch pulley, operated by lever, *G*. As the gears operate at a high rate of speed, it is impossible to make the speed changes when driven by the regular clutch pulley on account of the severe impact caused by the sudden engagement of the gears and clutches. To overcome this, an auxiliary friction clutch is interposed between the main friction pulley and the gears in the speed box. This auxiliary friction is operated by lever, *F*, and by its use the gears are made to turn very slowly and the different speed changes can be made without the slightest jar or shock. The different speeds and feeds, and the combination by which they are obtained, are shown on a speed and feed index plate attached to the feed box. To obtain 45 revolutions of spindle per minute, lever, *Z*, is set at *slow*, and the rod, *Y*, at *A*. The operator first throws lever, *Z*, in the direction marked *slow*. This is the back gear lever and operates one gear and a positive clutch. If the gears have come to rest, so that the teeth will engage, it will not be necessary to revolve them, but if not at rest, the operator gently pulls lever, *F*. This

operates the auxiliary friction clutch and causes the gears to turn slowly until they can be brought into engagement. The position of the two rods, *Y*, is indicated by pointers traveling across the face of a target lettered *B, A, C, D*. The front rod, *Y*, has a pointer which indicates its two positions, *C* and *D*, while the rear rod, *Y*, has another pointer indicating its positions, *B* and *A*. The lever, *E*, has a pin which engages slots in the two rods, *Y*. By sliding the lever backward in its bearing, *H*, the pin enters the slot in the rear rod, *Y*, and by sliding the lever forward, the pin enters the slot in the front rod, *Y*. Only one of the rods can be moved at one time and the pin cannot be moved from one rod to the other until both are in neutral positions. To change the pin from one rod, *Y*, to the other, it is always necessary to bring the slots in both rods opposite the slot in the center strip. If the gears do not slide together in the position in which they come to rest, a slight pressure on lever, *F*, gently revolves the gears, when they can immediately be thrown into engagement by lever, *E*. The actual sliding of the gears is accomplished by right and left sidewise movements of the lever, *E*, while the changing of the pin which moves the rods, *Y*, from one to the other, is accomplished by sliding the lever through its bearing, *H*.

The six feeds are obtained by a pull rod which operates the back gears, and the pull rod, *W*, which operates the drive key. It will be noted that all of the levers are so placed that the operator, while standing in front of the machine can reach any of them without stooping over. This is an important factor and facilitates operation. In addition to the graduated dial automatic feed tripping device, another safety trip is added, which automatically trips the feed when the spindle has reached its lowest position. This prevents possible accident on account of feeding down too far.

These machines are usually equipped with a pump, tank and piping for supplying drilling compound when working in steel. The pump is attached to the outside of the speed box and is driven by a short, round belt from the pulley on the main driving shaft. A flange cast entirely around the base plate prevents the liquid from running over onto the floor. To arrange the machine for motor drive, a special bed plate, having an extension for the motor, is provided. The motor is attached underneath the clutch pulley, to which it is belted. A constant speed motor of from 10 to 20-horsepower capacity, depending upon the work to be done, should be used. The clutch pulley permits the machine to be stopped and started without stopping the motor. The machine is built with either a standard bracket type of table, as shown in Fig. 3, or with a compound table, as shown in Figs. 1 and 2. Both types of tables are provided with a telescopic elevating screw, which eliminates the necessity of making a hole through the floor. In Fig. 3, the drill is equipped with a two-jaw universal chuck, especially adapted for holding gear blank forgings and similar work. The jaws are made detachable and special shapes can be fitted for pieces of irregular form. In Fig. 3, a 2½-inch, high speed drill is shown boring a steel gear blank at a feed of four inches per minute. The machine shown in these illustrations has a capacity for drilling three-inch holes with high speed drills in solid steel at the feeds and speeds recommended by the drill manufacturers.

Brussells Conference Appoints Committees

Representing the Great Manufacturing Nations—Judge Gary Explains the Objects of the Meeting—Received by King George

By J. Horton, Staff Correspondent

Brussels, Belgium, July 6. (By cable.)

One hundred and thirty delegates are present at the international conference, including representatives of America, England, Canada, Belgium, France, Germany, Italy, Russia, Austria and Hungary. The idea of an international association has been approved, and a committee appointed to work out the plan. Judge Gary was elected chairman of the conference, and explained his views concerning co-operation of the manufacturers of the world.

"Suppose," said he, "that a company of men engaged in business and possessing much capital, power and influence, should by their conduct, unjust or oppressive, secure universal disapproval, disgust and antagonism on the part of the public. In a brief space of time these men would be driven out of business. Suppose a producer of any commodity for sale should in any way within his power ill-treat all of his customers, how long would it be before the producer would be in bankruptcy?

"Suppose an employer of labor manifestly treated his employes unfairly and poorly. In time, as a result of the action of those interested, aided by public sentiment, a remedy would be found, and this after a great interruption of business and a loss of money."

"It would be difficult," the chairman continued, "to bring about an ideal in business, yet a right disposition, courage, patience and the application of the highest thought might reach that position. The first essential to this is thorough acquaintance and frequent intercourse."

"There should be established and continuously maintained," Judge Gary said, "a business friendship which compels one to feel the same concern for his neighbor that he has for himself. It is no less in principle than the golden rule applied to business. Is it possible? If it is it will be certain to pay. True it is that sometimes, and too often, deceit is practiced and that advantage has been taken by those who have been given confidence by others, but this fact should dishearten no one.

"For example, take any two men in this room engaged in competitive business, but who are sufficiently acquainted to have the entire confidence of each other. Is there any doubt that in the daily conduct of their affairs neither would be disposed to do anything unneighborly or unreasonable toward the other? Or that the acquaintance would bring to both better results than could be realized if they were unfriendly or engaged in bitter and destructive competition. If they are in frequent discussion on questions in which they are interested, freely interchanging opinions and frankly disclosing conditions concerning their business, will not the individual conclusion reached by each naturally be of a higher order and more satisfactory in every particular?

"Argument, if sound, applies with greater force whenever a large number of persons are in the habit of meeting one another with the same spirit of friendship which exists with reference to a small number."

Judge Gary then briefly described conditions in the United States and

declared that Americans are anxious to co-operate with their European friends. Baron Von Bodenhausen, of the Krupp Works, who visited the United States last year, spoke for the German group, and heartily supported Judge Gary's idea. Others who supported the plan, were, Count Zuziria, of Spain; M. Wittmeur, of Russia, and M. Arninivonbird of Hungary, T. J. Drummond, of Canada, J. A. Farrell, Charles M. Schwab, Willis L. King, and E. A. S. Clarke, of the United States.

Committees were announced as follows: American, E. H. Gary, J. A. Farrell, E. A. S. Clarke, C. M. Schwab and Willis L. King; British committee, G. Scoby Smith, Sir John Randles, H. Steel Jr., M. Mannaberg and Arch. Colville; German, Belgian and French committees were also chosen. A further special committee was also appointed, of which Judge Gary is chairman and W. B. Peat, London, is secretary to meet again at the call of the chairman. The conference concluded with congratulatory speech by Judge Gary, expressing satisfaction with the results of the conference. He said they never would regret having come together. Other speakers expressed thanks to the American delegates for the initiative taken in calling together the conference. This afternoon they were received by the King at the palace in glorious sunshine weather. Conditions are quite perfect.

Representatives Present.

The official list of representatives of the steel industries of different countries at the conference, is as follows:

United States.

E. H. Gary, chairman, United States Steel Corporation, New York.
Powell Stackhouse, Cambria Steel Co., Johnstown, Pa.
Willis L. King, vice president, Jones & Laughlin Steel Co., Pittsburg.
Charles M. Schwab, Bethlehem Steel Corporation, Bethlehem, Pa.
E. C. Felton, president Pennsylvania Steel Co., Philadelphia.
E. A. S. Clarke, president Lackawanna Steel Co., New York.
James A. Campbell, president Youngstown Sheet & Tube Co., Youngstown, O.
J. G. Butler Jr., president Bessemer Pig Iron Association, Youngstown, O.
W. A. Rogers, Rogers, Brown & Co., Buffalo.
Samuel Mather, Pickands, Mather & Co., Cleveland.
T. J. Drummond, president Lake Superior Corporation, Sault Ste. Marie, Ontario.
James A. Farrell, president United States Steel Corporation, New York.

United Kingdom

Sir Hugh Bell, Bart. 95 Sloane street, London. S. W., England.
Sir John S. Randles, chairman, Moss Bay Hematite Iron & Steel Co., Ltd., Workington, England.
Col. Sir Charles Allen, Kt., Ebbw Vale Steel, Iron & Coal Co., Ebbw Vale, Monmouth, Wales.
G. Scoby Smith, managing director, Bolckow-Vaughn & Co., Ltd., Middlesboro, England.
A. T. Keen, chairman, Guest, Keen & Nettlefolds, Ltd., London Works, Southwick, Birmingham, England.
Arthur Cooper, managing director, North Eastern Steel Co., Ltd., West March, Middlesboro, England.
M. Mannaberg, Frodingham Iron & Steel Co., Ltd., near Doncaster, England.
Benjamin Talbot, manager, Cargo Fleet Iron Co., Ltd., Middlesboro, England.
A. J. Dorman, director, Messrs. Dorman, Long & Co., Middlesboro, England.
R. Beaumont Thomas, director, Richard Thomas & Co., Ltd., Llanelly, Wales.
Henry Summers, John Summers & Sons, Ltd., Stalybridge, England.
W. R. Lysaght, managing director, John Lysaght, Ltd., Bristol, England.
W. P. Rylands, director, Rylands, Ltd., Warrington, England.
F. Scott Smith, general manager, Samuel Fox & Co., Ltd., Stockbridge Works, near Sheffield, England.
Harry Steel Jr., director, Steel, Peech & Tozer, Ltd., Rotherham, York, England.
Lincoln Chandler, secretary, Metropolitan Amalgamated Railway, Carriage & Wagon Co., Ltd., Saltley, Birmingham, England.
W. H. Hewlett, Wigan Coal & Iron Co., Wigan, England.
Geo. Ainsworth, Consett Iron Co., Ltd., Consett, Durham, Eng.
Arch. Colville, managing director, David Colville & Sons, Ltd., Motherwell, Scotland.
Peter Donaldson, 7, Royal Bank Place, Glasgow, Scotland.
W. J. Armitage, Brown Bayless Steel Works, Ltd., Sheffield, England.
George Hatton, managing director, The Earl of Dudley's Round Oak Works, Brierley Hill, England.
Sir Wm. Thomas Lewis, Bart., chairman, Lewis Merthyr Consolidated Collieries, Ltd., Cardiff, Wales.
G. A. Mitchell, director, Robt. Addie & Sons Collieries, Ltd., Glasgow, Scotland.
William Simons. Shelton Iron, Steel & Coal Co., Ltd., Stoke-on-Trent, England.
J. H. Chapman, Ibbotson Bros. & Co., Ltd., Globe Steel Works, Sheffield, England.
Thompson Jowett, Wilford & Co., Ltd., Park House Works, Sheffield, England.
W. J. Storey, Darwen & Mostyn Iron Co., Ltd., Mostyn, N. Wales.
Edward T. John, M. P., Linthorpe-Dinsdale Smelting Co., Ltd., Middlesboro, England.
J. H. Darby, Brymbo Steel Works, Ltd., Waxham, Wales.
Albert Good, Cammell, Laird & Co., Ltd., Sheffield, England.
Herbert Eccles, Llanelly Steel Co., Llanelly, S. Wales.
Frank W. Gilbertson, W. Gilbertson & Co., Ltd., Pontardane, Swansea, S. Wales.
E. Cottam, Edwin Cottam & Co., Ltd., Don Spring Works, Masboro, Rotherham, England.
Wm. Turner MacLellen, P. & W. MacLellan, Ltd., 129 Iron Gate, Glasgow, Scotland.
Robert Dyson, Owen & Dyson, Rotherham, York, England.
N. Retallack, Birmingham Ry. Carriage & Wagon Co., Ltd., Smethwick, Birmingham, England.
W. S. Laycock, Cravens' Road, Darnall, Sheffield, England.
Cecil A. Cochrane, Cochrane & Co., Ltd., Ormesby Iron Works, Middlesboro, England.
Col. G. M. Jackson, The Claycross Co., near Chesterfield, England.

Germany.

Louis Roechling, Kommerzienrat, Roechling'sche Eisen-und-Stahlwerke, Voelklingen an Saar, Germany.
F. Baare, Kommerzienrat, Bochumer Verein-fuer Bergbau und Gussstahlfabrikation Gesellschaft, fuer Stahlindustrie, Bochum 1, Westphalia, Germany.
Herr. Grossberger, general director, Lothringer Huettenverein Aurmetz-Friede, Kneuttingen-Huette, Lothringen, Germany.
Baron von Bodenhausen, Fried. Krupp Aktiengellschaft, Essen, Germany.
Herr. Springorum, general director, Eisen- und Stahlwerk Hoesch Aktiengellschaft, Dortmund, Germany.
Herr. Direktor Muller, Gebrueder Stumm Gesellschaft mit Beschrankten Haftnung, Neunkirchen, Bez. Trier, Germany.
W. Gussman, director, Stahlwerks Verband, Duesseldorf, Germany.
E. Schaltenbrand, chairman Stahlwerks Verband, Duesseldorf, Germany.
Mons. Pastor, commercial manager, Les Petits Fils de Francois de Wendel & Cie, Hayingen, Germany.

Austria-Hungary.

Armin von Biro, Rimamurany-Salgo-Tarjaner Eisenwerks - Actiengesellschaft, Budapest, Hungary.
A. Von Kerpely, manager, Osterreichisch Alpine Montangesellschaft, Vienna, Austria.
A. Trappen, director, Krainische Industrie Gesellschaft, Assling-Huette, Krain, Austria.
W. Kestranek, manager, Prager Eisenindustrie, Gesellschaft, Vienna, Austria.
Dr. Fried. Schuster, managing director, Witkowitzer Bergbau & Eisenhuetten Gewerkschaft, Vienna, Austria.
Otto Noot, director, Krainische Industrie-Gesellschaft, Assling-Huette, Krain, Austria.
Hugo von Noot, president, Krainische Industrie - Gesellschaft, Assling - Huette, Krain Austria.
G. Gunther, general director, Oesterreichische Berg und Huettenwerksgesellschaft.
O. Rathballer.
Dr. Paul Biro.

France.

Monsieur A. Dreux, Societe des Acieries de Longwy, Mont St. Martin, Meurthe-et-Moselle, France.
Monsieur Alph. Fould, president, Societe Anonyme des Hauts Fourneaux Forges et Acieries de Pompey, 85 Rue St. Lazare, Paris, France.
Th. Laurent, Cie. des Forges et Acieries de la Marine et d'Homecourt, St. Chamond, Loire, France.
Monsieur E. Paraf, Cie. des Forges de Chatillon, Commentry et Neuves-Maisons, 19 Rue de la Rochefoucauld, Paris, France.
E. Progneaux, Usines Metallurgiques de la Basse-Loire, 1 Rue Chernoviz, Paris, France.
A. Rosimont, Eng., Societe Anonyme des Forges et Acieries du Nord et de l'Est, Valenciennes, France.
M. Charles de Wendel, director. D. Wendel & Cie, Joeuf, Meurthe-er-Moselle, France.
M. R. de Lebrielle, director, Comptoir d'Exportation de Produits Metallurgiques, S. A., 32 Boulevard Haussman, Paris, France.
Mons. Freycinet.
Mons. Nicou.
Mons. Pralon.

Russia.

M. Jasiukowicz, Societe Metallurgique Dnieprovienne du Midi de la Russe, Gorokhovaia 1, St. Petersburg, Russia.
O. Bihet, Societe Metallurgique Russo-Belge, Jupille-Les Liege, Russia.
P. d'Arcy, Societe Metallurgique Russo-Belge, Jupille-Les Liege, Russia.

Italy.

Cavaliere C. Fera, Savona, Italy.

Spain.

Coste de Zubiria.

Belgium.

Jan Demoulin, Societe Metallurgique de Sambre et Moselle, Montigny sur-Sambre, Belgium.
Constant Renson, managing director, Societe Anonyme des Acieries d'Angleur, Tilleur, Belgium.
Paul Keim, director, Societe Anonyme des Usines Metallurgiques du Hainaut, Couillet, Belgium.
A. Greiner, director general, Societe Anonyme John Cockerill, Seraing, Belgium.
E. Tonneau, Societe Anonyme John Cockerill, Seraing, Belgium.
G. Trasenter, managing director, Societe Anonyme D'Ougree, Marihaye, Ougree, Belgium.
L. Spaak, director, Societe Anonyme D'Ougree, Marihaye, Ougree, Belgium.
J. Van Hoegaerden, director, Societe Anonyme D'Ougree, Marihaye, Ougree, Belgium.
Gustav Boel, Usines Gustave Boel, Belgium.
C. Bourgy, Societe Anonyme John Cockerill, Seraing, Belgium.
Armond Stouls, Liege, Belgium.
August Collon.
F. Lacanne.
F. Spalart.
Fr. Lemaire.
J. B. Dessart.
A. Rabault.
G. Bevy.
Mons. Stoumont.
August Simont.
Baron Z. de Lavaleye.

During the greater portion of last week, the New York stock exchange was dominated by a scare due to reports of damaged crops. Declines generally, however, were followed by recoveries at the end of the week. Virginia Iron, Coal & Coke shares were forced to a high mark on rumors that that company would be absorbed by the Steel Corporation.

Stocks were weak and lower on Monday, due to depressing weather reports, and the decision of the Interstate Commerce Commission against the anthracite coal roads; foreign markets were also weak and lower. All markets were closed on Tuesday. On Wednesday, the market was depressed; corn advanced sharply; English consols declined to the low price of the year. On Thursday stocks rallied sharply; the American Steel Foundries passed the quarterly dividend of 1¼ per cent; the grain markets reacted on reports of relief from drouth. On Friday, prices on the exchange were generally firm and averaged higher; grain markets were active and excited; cotton closed lower. On Saturday, the stock market was dull but steady; grain markets were active and higher.

Money on call ranged between 2½ and 2 per cent. Time money experienced a slightly better demand during the week, the supply being quite liberal. The statement of the actual condition of clearing house institutions showed loans increased $628,000; net deposits decreased $19,556,000; total reserve, $429,004,000; excess of reserve, $7,377,000, a decrease of $16,072,000; and the percentage of reserve was 25.7, compared with 28.17, the week previous. Non-member banks and trust companies showed loans increased $9,037,500; net deposits increased $12,503,700; reserve on deposits increased $3,433,500, and the percentage of reserve 19.5 against 19.2 the week previous. Commercial failures for the week numbered 176, against 254 the preceding week and 189 the corresponding week last year. Bank clearings for the week were about 4.2 below the preceding week, and 4.8 per cent above last year. Immigrants arriving at United States ports during May numbered 95,361, compared with 98,036 in April, and 133,544 a year ago. Shares were sold to the number of 1,065,600, compared with 1,987,400 the preceding week, and 3,304,600 the corresponding week last year. Bonds, exclusive of government bonds were sold to the amount of $9,372,000, compared with $15,791,000 the preceding week, and $7,509,000 the corresponding week last year.

	Closing Quo. July 8	Changes in week	Annual Meeting date 1911.		Stock Outstanding	Basis	Dividend Last	Div. Pay Date Last
Allis-Chalmers	9	.....			$19,820,000		.....	.....
Allis-Chalmers, pr	28	—1½	Nov.	2	16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	10½	+ ⅛	Feb.	1	41,233,300		1¾ Q.	.....
American Can, pr	85⅛	+ ⅜			41,233,300	7 cum.	1¾ Q.	July, 1911
Am. Car & Fdy	56½	.....	June	29	30,000,000		½ Q.	July, 1911
Am. Car & Fdy., pr	117	.....			30,000,000	n. c.	1¾ Q.	July, 1911
American Loc	40¾	.....	Oct.	17	25,000,000	5	1¾ Q.	Aug., 1908
American Loc., pr	110	.....			25,000,000	7 cum.	1¾ Q.	July, 1911
American Ship	64¾	.....	Oct.	11	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	110	—1			7,900,000	7 cum.	1¾ Q.	July, 1911
Am. Steel Foundries	37⅛	—4⅛	Dec.	7	17,184,000		1 Q.	May, 1911
Barney & Smith	20	.....	June	6	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	87	.....			2,500,000	8 cum.	2 Q.	June, 1911
Bethlehem Steel	33	.....	April	4	14,862,000		.....	.....
Bethlehem Steel, pr	62⅛	— ⅞			14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	44⅞	.....	Mar.	21	45,000,000	5	1¼ Q.	May, 1911
Cambria Iron	44	.....			8,468,000*	4	2 S. A.	Apr., 1911
Chicago Pneumatic Tool	51¼	+ ¼	Feb.	20	6,485,800	4	1 Q.	July, 1911
Colorado Fuel	34¼	— ¼	Oct.	16	34,235,500		1¾ Q.	Apr., 1902
Crucible Steel	12¾	— ¼	Oct.	18	24,578,400		3½.	.....
Crucible Steel, pr	81½	.....			24,463,500	7 cum.	1¾ Q.	June, 1911
Empire Steel	5	.....	Feb.	22	1,254,770		.....	.....
Empire Steel, pr	50	.....			2,500,000	6 cum.	1 S. A.	July, 1911
Fay & Egan	70	.....	Feb.	21	1,000,000	6 cum.	3 S. A.	Feb., 1911
Fay & Egan, pr	110	.....			1,000,000	7 cum.	1¾ Q.	Feb., 1911
General Electric	163¼	+2	May	9	65,179,600	8	2 Q.	July, 1911
Harbison-Walker	45	.....	Jan.	16	18,000,000		½ Q.	June, 1911
Harbison-Walker, pr	98	.....			9,600,000	6 cum.	1½ Q.	July, 1911
International Pump	41¾	.....	Dec.	12	17,762,500		1 Q.	Nov., 1910
International Pump, pr	89½	— ⅜			11,350,000	6 cum.	1½ Q.	Aug., 1911
Lackawanna Steel	42	.....	Mar.	8	34,978,000		.....	.....
Lake Sup. Corp	26	+ ½	Oct.	4	40,000,000		.....	.....
New York Air Brake	75	+ ⅛	Mar.	8	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	94	.....	Feb.	8	8,500,000	6	1½ Q.	June, 1911
Niles-Bement-Pond, pr	104	.....			2,000,000	6 cum	1½ Q.	May, 1911
Otis Elevator Co	72	.....	Mar.	20	6,375,000	1	1 Q.	July, 1911
Otis Elevator Co., pr	103	+2			6,310,000	6 n. c.	1½ Q.	July, 1911
Pa. Steel	60	.....	May	8	10,750,000		.....	.....
Pa. Steel, pr	106½	.....			16,500,000	7 n. c.	3½ S. A.	May, 1911
Pittsburg Coal Co	19¾	.....	Feb.	10	28,104,600		.....	.....
Pittsburg Coal Co., pr	84¾	+ ⅛			27,071,800	7 cum.	1¾ Q.	July, 1911
Pressed Steel Car	36	—1	Feb.	15	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	102	.....			12,500,000	7 n. c.	1¾ Q.	May, 1911
Pullman	162	.....	Nov.	8	120,000,000	8	2 Q.	May, 1911
Railway Stl. Spring	36	.....	Mar.	2	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	101¼	— ¾			13,500,000	7 cum	1¾ Q.	June, 1911
Rep. Iron & Steel	30	— ½	Oct.	18	27,191,000		.....	.....
Rep. Iron & Steel, pr	93¾	.....			25,000,000	7 cum.	1¾ Q.	July, 1911
Sloss-Sheffield	48⅛	—2¼	Mar.	15	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....	.....		6,700,000	7 n. c.	1¾ Q.	July, 1911
U. S. Pipe & Fdy. Co.	16	— ½	June	28	12,106,300		1 Q.	Dec., 1910
U. S. Pipe & Fdy Co., pr	57½	.....			12,106,300	2	1¼ Q.	June, 1911
U. S. Steel	78¾	+ ⅜	April	17	508,302,500	5	1¼ Q.	June, 1911
U. S. Steel, pr	118⅜	+ ¼			360,281,100	7 cum.	1¾ Q.	May, 1911
U. S. Steel 5s	105⅞	+ ¼			463,798,000	5	.....	.....
Va. Iron, Coal & Coke	89	+17	Sept.	19	9,073,680		5. †	Oct., 1907
Westinghouse Electric	76¼	+1	July	26	3,998,700*		1¾ Q.	July, 1911
Westinghouse Air Brake	148½	.....	Oct.	3	13,750,000*		5 Q. ‡	July, 1911

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special

Copper Stocks.

New York.—Amalgamated Copper closed 69½, a net loss of ⅛.

Boston. — Butte Coalition closed 19⅛, no change; Calumet & Arizona closed 58, a net loss of ¾; Calumet & Hecla closed 475, no change; North Butte Mining closed 33½, a net gain of ¾; Quincy Mining closed 73½, a net loss of ½.

Financial Notes.

The International Steam Pump Co. has declared a regular quarterly dividend of 1½ per cent on preferred stock, payable Aug. 10.

The Harbison-Walker Refractories Co. has declared the regular quarterly dividends of 1½ per cent on preferred stock, payable July 20.

THE IRON TRADE REVIEW

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THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

May, 1910	5,827
May	5,827
June	5,842
July	5,864
August	5,875
September	5,895
October	5,955
November	5,993
December	6,026
January, 1911	6,058
February	6,072
March	6,091
April	6,108
May	6,112
June	6,124

July 13, 1911

Our Blast Furnace Capacity.

For several years past it has been our custom to present in our annual number, the first issue of the year, a complete summary of new blast furnace erection, with a careful estimate of the actual commercial capacity of the country on the first day of the year. On account of the keen interest in the matter of total capacity at this time, a summary bringing the data down to midsummer cannot fail to be of value.

Inasmuch as the occasional compilations of the American Iron and Steel Association of the theoretical total capacity of the country are widely circulated and are not infrequently misunderstood, the basis upon which our estimates are made must be emphasized. The Association's total is the sum of the capacities reported to it by managers of furnaces which have not been formally transferred to the abandoned list. Frequently the individual furnaces are overrated. Never, or at least seldom, is allowance made for relining or accidents. The furnace manager presumably assumes that such incidents will occur in other years than the one for which he is estimating. In a blast furnace which is abandoned because it cannot make money, there is little salvage, and there is always the possibility that the market may boom and the owner be able to secure raw materials and run the furnace for a few months at a profit, even although under ordinary conditions its operation would entail a loss. Throughout the history of the industry, furnaces have had to be abandoned, and there is always a considerable number of furnaces clearly destined for abandonment, but which have not yet come off the official record. Accordingly the Association's totals of theoretical capacity at different dates are figures which should be compared with each other, rather than regarded as direct indices of the actual amount of pig iron which can be made.

Our own computation is totally different, being based upon actual performance. We observe that in the twelve months ended June 30, 1907, the existing blast furnaces made all the pig iron they could. The average price of No. 2 foundry iron at Birmingham in that twelve month was nearly $20, while at valley furnaces the averages were: Bessemer, $21; basic, $20.66; No. 2 foundry, $21.62. If a furnace did not contribute to the make of that period, what right has it to be noticed? The production for the year was 26,202,985 tons. Starting with that basis, counting the completion of distinctly new stacks as additions to capacity, and assuming the rebuilding and otherwise improving of old stacks to balance the natural obsolescence since then—having in view, by the way, the change in industrial conditions—the following table was constructed of actual commercial capacities, showing increases during the year, and capacity at the close:

	New in year.	Total at close.
1907	2,065,000	28,025,000
1908	1,188,000	29,213,000
1909	1,930,000	31,143,000
1910	1,794,000	32,837,000

Our last article (Jan. 5, 1911) reached its conclusion in the following words:

No one is particularly interested in how much pig iron would be made were there unlimited supplies of ore and coke at low prices, and unlimited tonnages of pig iron could be sold at $20 or $30 a ton. What the industry is vitally interested in is how much pig iron can be made at present prices or at prices say 10 to 20 per cent higher.

That question we answer by saying about 33,000,000 tons.

Since those words were written, pig iron has declined in price, taking the United States as a whole, an average of about 50 cents a ton, southern iron having declined $1 and most descriptions of northern iron less. An advance of $1 a ton in pig iron, or an average of $1 a ton throughout the list of finished steel products, would look quite large to the trade at this juncture, and accordingly the reckoning of effective capacity should be made even closer than at the beginning of the year. At the outside, the capacity to be reckoned with at present is not more than the 33,000,000 tons at the beginning of this year, plus the contribution of new furnaces since completed.

Our last summary included three furnaces which had been completed by the close of 1910, but had not been blown in: Aliquippa No. 4 and Bethlehem F and G. Two of these have made pig iron since then. They do not affect the present reckoning.

There were listed as being built 12 furnaces, with a total prospective capacity of 1,700,000 tons. Of these, one has been blown in, Haselton No. 4 of the Republic Iron & Steel Co., June 9. Four others may be regarded, from a commercial standpoint, as effective at this date. All can be blown in shortly, and would undoubtedly have been blown in before this,

had there been heavy demand in the past six months. These four are: Josephine No. 2, merchant; Central No. 4, Steel Corporation; River No. 2, merchant; Worth No. 2, independent steel interest. The capacity of these four, together with Haselton No. 4, is 680,000 tons.

Adding this to the strict reckoning of 32,837,000 tons found for Dec. 31, 1910, we have 33,517,000 tons, and we conclude that the effective blast furnace capacity of the country at the middle of this year is approximately 33,500,000 tons. One cannot be arbitrary in this matter. If the furnaces in question were forced by some outside power to make this amount of pig iron in a year, with prices of raw materials, labor and finished product as they are, the losses would aggregate millions of dollars. The industry cannot make 33,500,000 tons of pig iron in a year unless there be a material advance in selling price, or unless some of them lose a great deal of money. On the other hand, given a sharp advance in selling prices with an unlimited supply of raw materials at no advance, there could be made, by hard driving, considerably more pig iron, possibly a million tons more. In these circumstances, the ordinary business man will accept 33,500,000 tons as a fair statement of the actual blast furnace capacity of the country at this time.

Of the furnaces being built at the beginning of this year, we deducted five as having become effective. There are left seven, rated at a total of 1,020 000 tons annually. So we may say that the alignment of the industry is that, given considerably better times than the present, the country will be able to make about 35,000,000 tons of pig iron in 1912, but not nearly as much if prices remain as they are and losses are to be avoided.

The Oriskany Ore & Iron Co. banked its Alleghany, Va., stack on June 28, and turned it and the Shenandoah stack back to their owners, the Alleghany Ore & Iron Co. All mail to the Oriskany Ore & Iron Co. should hereafter be addressed to Buena Vista, Va.

A Dragon With a Tail

The New York *Times* discusses at length the report of Herbert Knox Smith, commissioner of corporations, on the steel industry. It calls attention to Mr. Smith's criticisms of the alleged stock watering operations of the Corporation in 1901, dwelling particularly upon the high valuation placed upon the ore reserves. Then, after asserting that iron in the ground is not worth more than from 1 to 15 cents a ton, he portrays the Steel Corporation as a giant monopoly, based upon its great ore holdings. In conclusion, the *Times* says:

It is as if Commissioner of Corporations Smith, as the government's head gamekeeper, had been sent out into the forest to inquire into the nature and habits of a certain dragon, as to which disquieting rumors were afloat. On the model of this Steel Corporation document his report would have read thus:

(a) Of this dragon no man need be afraid. Were he not stuffed out and padded in every part of his body, his rough skin would hang loose upon his old bones. His strength is in no wise proportioned to his apparent bulk. As to his long and armored tail, I have discovered that it is of papier mache. It would be detached by one good kick of the federal boot. Besides, the animal is growing weaker.

(b) Nevertheless, owing to the enormous power which this scaly monster wields through the possession of such an immeasurable tail and because of his terrifying appearance and his irresistible strength, it would appear to be necessary for the public peace and safety to find some effective means of taming and controlling him.

Foundrymen Have Outing

The first summer outing of the New England Foundrymen's Association was held Wednesday, July 12, at the Point Shirley club, Winthrop, Mass. The members assembled in Boston and in a body went by elevated train and boat to connect with the noon train for Orient Heights, arriving there about one o'clock. Automobiles were in waiting to convey the party on a sight-seeing trip along the North Shore, which included in its itinerary many of the quaint and picturesque towns and points of interest in that historic community. Returning the party proceeded to the Point Shirley club, where dinner was served at three o'clock.

The Virginia Iron, Coal & Coke Co. relighted its Foster Falls, Va., stack on June 16.

FOURTH IN RANK

Illinois Becomes in Production of Coke—Rapid Increase.

The coke output of Illinois during 1910, according to statistics compiled by the United States Geological Survey, was 1,514,504 tons, an increase of 237,548 tons or 18.6 per cent over 1909, and more than four times the output of 1908. Illinois thus became fourth in rank among the coke producing states, exceeding the production of Virginia by nearly 50,000 short tons. This increase was due mainly to the construction and operation of 200 Semet-Solvay by-product ovens at South Chicago, and 280 Koppers regenerative ovens at Joliet. The value of the product increased from $5,361,510 in 1909 to $6,712,550 in 1910, a gain of 25.2 per cent. The average price per ton advanced from $4.20 to $4.43. This coke was made mainly from coal mined in West Virginia.

The higher yield of coal in coke made by by-product ovens was shown by the average yield of 76.8 per cent of West Virginia coal in coke at the Joliet and South Chicago ovens, whereas the average yield in the coke making districts of West Virginia, where all but 120 out of some 20,000 ovens were of the bee-hive type, was 61.1 per cent.

In addition to the production of coke at South Chicago and Joliet, a small quantity was made from Illinois coal in Belgium ovens at Equality, Gallatin county.

Coke Production Compared

The following table, compiled by the Connellsville *Courier,* gives the coke production during the second quarter of 1911, ending with June 30, with a comparative statement of the second quarters from 1906 to 1910.

Second quarter, 1911	3,784,349
Second quarter, 1910	5,318,245
Second quarter, 1909	3,451,239
Second quarter, 1908	2,073,638
Second quarter, 1907	5,418,969
Second quarter, 1906	4,871,838

Production last week made another slight gain of 2,528 tons, as compared with the preceding week, the total being 275,950 tons, as against 273,422 tons. The gain was entirely with the merchant ovens, the furnace production remaining at the same figure as the previous week. The total of the merchant ovens was 113,944 tons, compared with 111,416 tons.

The Canadian Car & Foundry Co., Montreal, has declared its regular quarterly dividend of 1¾ per cent on preferred stock, payable July 25.

ACTIVE CAR INQUIRY

Is Not Heavy—Some Late Awards and Pending Lots.

Though there is a larger number of cars being tentatively considered for purchase, the active inquiries in the market at present are not much over 6,000 cars, principal among which are 3,860 for the Erie and 1,027 for the Queen & Crescent. The Bethlehem Steel Co. is still out for 100 all-steel hopper cars. Late car awards include 450 steel underframe box cars for the Ann Arbor railroad to the Western Car & Foundry Co.; 30 all-steel elevated and subway coaches for the Philadelphia Rapid Transit Co. to the J. G. Brill Car Co.; 25 pay as you enter cars for the Montreal Street Railway Co. to the Ottawa Car Co., while it is understood that the Standard Steel Car Co. has taken 50 all-steel coaches for the Boston Elevated Railway Co. Of the 1,000 steel underframes recently placed by the Louisville & Nashville, 250 each were awarded to the Bettendorf Axle Co. and the Mt. Vernon Car Co. in addition to the 500 placed with the Pressed Steel Car Co. and previously reported. The Lehigh Valley railroad has placed 25 steel baggage cars with the Standard Steel Car Co.

BRUSSELS CONFERENCE

Will Promote Peace and Help Labor, Says Judge Gary.

In an interview given out in Paris on June 9, Judge Gary expressed the belief that the Brussels conference is a long step toward universal peace. "By this new international association," said Judge Gary, "the steel industry will be so closely allied to the commerce of the world that it will wield a mighty hand in politics and will have influence to negative any proposed action, which is apt to destroy a nation's basis of prosperity."

In explaining the significance of the congress, Judge Gary likened the association to a bar association, stating that its powers were of the same order. "I should call the present congress," he said, "a combination in friendly association of steel and iron manufacturers for the purpose of advancement and better mutual understanding of all questions of economical, ethical or sociological interest pertaining to the steel industry. Questions of regulation of prices, distribution of territory or the circumvention of tariff laws have no more part in the congress than a bar association, formed by attorneys, controls the individual actions of its members or regulates the fees they may charge.

"The association will do great good for the industrial world generally," Mr. Gary further stated, "and especially as concerns the relations of employers and employes. A standard for dealing with workmen will be set, and this, being the world's standard, will be a high one. The congress also opens the way for standardizing the steel products of the world, thereby effecting a saving in the cost of production."

Builds New Foundry

The Henry H. Martin Mfg. Co., Inc., Louisville, Ky., which was recently incorporated with a capital stock of $10,000, is building a foundry for making grate bars and furnace castings as a specialty, at 201 North Cabel and Franklin streets. At first a building 36 x 100 feet will be completed, and the output will be about five tons a day. Beside its specialty, as noted, the company will figure on any gray iron castings up to 300 pounds each, where the quantity will warrant. The entire building and its equipment has been contracted for, and will be ready for business between July 15 and Aug. 1.

A New Composition.—"Strenolith" is the name given a new composition which is destined to supplant, in many cases, portland cement and masonry. It is composed largely of common earth, in combination with other inexpensive ingredients, and the whole forms an artificial stone that is claimed to be harder than concrete, an absolute non-conductor of heat and cold, and a perfect insulator against electric currents. Used as a base for asphalt in street-paving, it is especially recommended, as being far more economical than cement, quickly and easily mixed, and requiring less tamping. Being impervious to water, it is claimed that its use obviates the cracking and heaving, which sooner or later render repairs necessary. Further, it requires but an inch and a half of asphalt to make a perfect and permanent road surface. It is recommended for many other purposes, such as building blocks, railroad ties, sewer pipes, etc., but if it fulfills its main purpose as a paving material, is will find an illimitable field.

The Los Angeles county (Cal.) supervisors will receive bids for two engine generator sets on August 31. H. J. Lelande is clerk.

WAGE SCALE

Is Signed by the Western Bar Iron Association.

The Western Bar Iron Association on July 8 signed the wage scale of the Amalgamated Association of Iron, Steel and Tin Workers. This ends the wage scale conferences of the Amalgamated Association for the year beginning July 1. In all cases the wage agreements are practically the same as those which expired June 30 of this year. The fact that the employers have agreed to a renewal of last year's scale at a time when it was expected that the empoyes would be obliged to accept a general reduction in wages is gratifying, and it is interesting to note that, with one exception, a harmonious adjustment of the wage agreement was reached at the first joint conference between employers and employes. The first conference with the Western Bar Iron Association was held at Cambridge Springs, Pa., June 6, and notice was given that the men would be obliged to accept a reduction of 10 per cent. On June 22, representatives of 15 independent sheet and tin plate mills met a committee of Amalgamated Association representatives at Pittsburg and renewed the 1910-11 scale after a conference lasting several hours. On June 28, the Republic Iron & Steel Co. reaffirmed the 1910-11 Amalgamated scale, after a conference lasting but a few hours, and this action, no doubt, had a great deal to do with the adjustment of the wage agreement between the Amalgamated Association and the Western Bar Iron Association Saturday.

The Youngstown Sheet & Tube Co. and several other companies last week signed the wage scale presented by the United Sons of Vulcan, which is similar to the Amalgamated Association scale, and others are expected to take similar action this week.

Motor Company Organized

The United Electric Motor Co. has been organized at Menominee, Mich., by Ele Madson, president, and A. J. Josephson, secretary and treasurer, and Thomas Thorson, manager. The company will manufacture motors, dynamos and electrical specialties, and has leased the abandoned plant of the Submerged Electrical Motor Co. at Menominee, which has been idle for some years. No additional equipment will be needed at this time, but will be purchased as the demands of the business require.

ORE SHIPMENTS

Show Respectable Increase as Compared with May.

Iron ore shipments during June were 4,826,505 gross tons as against 7,316,592 gross tons for June, 1910, a decrease of 2,490,087 gross tons. The movement to July 1 of the present year was 8,842,908 gross tons as against 14,918,258 gross tons for the corresponding period last year, a decrease of 6,075,350 tons. It will, of course, not be difficult to overtake this lead if conditions of trade improve. Conditions are improving slowly, as noted by the fact that the June movement was 1,141,686 tons greater than the May movement, when 3,684,819 tons were moved. Ore sales are increasing slowly and vessel owners expect a reasonable improvement in conditions within a month. Some of the leading shippers expect to have all their vessels in employment by Aug. 1. Following are the ore shipments by ports:

Port.	June, 1910.	June, 1911.
Escanaba	767,618	538,168
Marquette	533,358	314,807
Ashland	708,248	394,555
Superior	1,321,877	1,635,651
Duluth	2,567,077	1,102,979
Two Harbors	1,418,414	840,345
Total	7,316,592	4,826,505
1911 decrease		2,490,087

Lake Erie Ore Receipts.

Out of a total shipment of 4,826,505 tons of ore during June, 3,746,383 tons were received at Lake Erie ports, distributed as follows:

Port.	June, 1911.
Buffalo	480,498
Erie	16,881
Conneaut	969,327
Ashtabula	858,374
Fairport	146,086
Cleveland	780,594
Lorain	438,237
Huron	15,879
Sandusky	.....
Toledo	28,512
Detroit	11,995
Total	3,746,383

Death of H. F. Frohman

Harry F. Frohman, general manager of the S. Obermayer Co., Cincinnati, and one of the foremost men connected with the development of foundry supplies and labor saving devices in the foundry, died in the offices of the company at 647 Evans street, Cincinnati, on July 5. He has been in ill health for several months, but his death was due directly to prostration brought on by the terrific heat that has prevailed for the past week.

Mr. Frohman started as an office boy with Simon Obermayer, who established the original S. Obermayer Co., in 1886. Since that time, he was continuously connected with the Obermayer Co., gradually advancing until he held the position of secretary and treasurer with the old company. At the re-organization of the company in 1901, Mr. Frohman was elected treasurer and general manager, and held that position until his death.

Under his management, the company was developed to its present commanding position in the foundry supply field. Mr. Frohman has made himself known not only to the foundry fraternity in Cincinnati, but to the large interests throughout the country and particularly in Pittsburg and Chicago. Mr. Frohman was born Dec. 8, 1868. He graduated from the Hughes High school, Cincinnati, and has made Cincinnati his home almost continuously during his whole life. He was well known outside of his business associations, being a member of the Business Men's Club, the Cincinnati Chamber of Commerce and was a thirty-second degree Mason.

H. F. Frohman.

Although Mr. Frohman had not been feeling well, his death was unexpected and came so suddenly that he died before a doctor could reach him. On Wednesday morning he went to his office as usual, but complained of the excessive heat, and retired to rest in a quiet part of the office. Instead of recovering and feeling better, he grew rapidly worse, and passed away within the hour. His loss is keenly felt not only by his many friends, but by the whole circle of men engaged in foundry work.

The Hart-Parr Co., Charles City, Ia., is building a 60 x 275-foot addition to its foundry. When completed the company will have a gray iron foundry 275 x 305 feet, with a second floor space of 40 x 275 feet above.

BETTER REPORTS

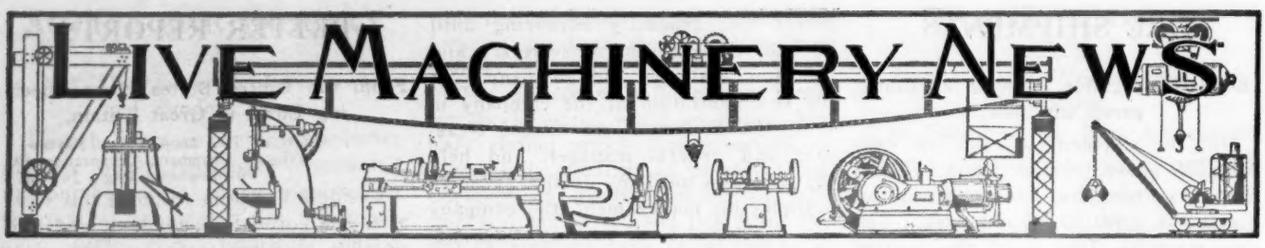
From the United States Have Cheering Effect in Great Britain.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 1.

Business has been resumed this week after the coronation holidays, and it is possible to form some estimate as to the position. Although no great transactions have taken place in pig iron, and prices have changed very little, it is agreed that the tone shows a marked improvement. Cleveland has been assisted by better reports from the United States, and prices have mended a little during the last day or two. The seamen's strike, while it has reduced shipments, has strengthened the market, and the home demand keeps up well. Yesterday's quotations were 46s 4d ($11.34) for cash transactions, with 46s 6d ($11.38) for monthly sales. The amount in store is 594,000 tons, practically what it was a week ago. The rapid growth of stocks, which for months has been such a disconcerting feature, has been completely arrested. Home contracts are also working off, and as the consumption of pig iron by all departments continues large, demand must increase shortly. The present is a stocktaking period, and new buying is likely to set in after the Birmingham quarterly meeting, which is due a fortnight hence. It is agreed that depression in raw materials cannot continue indefinitely, with exceptionally large output from mills, forges, furnaces and machine shops. Better prices are being paid for Derbyshire foundry iron. In the Scotch market sales are still merely for immediate delivery.

Finished Iron and Steel.—The finished iron and steel departments show a slow but steady improvement. Steel makers in particular are booking orders much more freely. Reports were quite unanimous on the Birmingham market to this effect. Partly, the improvement seems to be attributable to the coming Steel Conference, the impression being that whatever the precise result may be, the effect must be to tighten up the market. For the moment, foreign houses are not cutting the market quite as severely as they were. Belgian billets, for example, were quoted on 'Change at 90s—compared to 89s—the recent figure. British houses continue well engaged upon half-finished material. For finished steel there are better orders.

The Shenango Furnace Co. blew out its No. 1 stack at Sharpsville, Pa., on July 1 for relining and enlargement.



In New York, orders placed by the navy department constitute the most important machinery transactions. It is expected by dealers that the recent awarding of contracts on part of the proposed New York subway system will produce a large demand for contractors' equipment and supplies. The New York Central Railroad Co. will probably take action this month on its inquiry for machine tools submitted some time ago; the Newark, N. J., board of education is also expected to close bids on its list of machine tools very shortly. In Pittsburg, bids have now gone in on a large amount of equipment for the Pittsburg Crucible Steel Co.'s new plant at Midland, Pa. The reports of the Westinghouse companies indicate a satisfactory total of business for June. In Cleveland, the list of machine tools for the proposed new technical high school will soon be in the hands of the dealers. A number of Cleveland concerns, including the Perfection Spring Co., are formulating plans for increased shop capacities. In Chicago, the business in small lots on machine tools continues fair. Awards were made on the Santa Fe list last week, Manning, Maxwell & Moore, Inc., taking a large portion of it. In southern territory, a number of proposed power plant enterprises are creating an activity in electrical equipment.

Foundries

The Warner Instrument Co., Beloit, Wis., is completing the foundations for a new brass foundry, 50 x 34 feet. The old foundry will be equipped as a power plant.

The Henry H. Martin Mfg. Co., Louisville, Ky., recently incorporated, is building a foundry for making grate bars and furnace castings as a specialty, at 201 North Cabel and Franklin streets, that city.

Machine Tools

George Arndt and Frank Warren, Lincoln, Cal., will erect a garage and install new and modern machinery and tools.

The National Machine Co., Milwaukee, has been granted a permit to build a machine shop, estimated to cost $10,000, at National and Eleventh avenues, that city.

A list of machine tools and other metal-working equipment will shortly be required for a technical high school at Providence, R. I. Contracts have just been placed for the general construction of the building.

Iron and Steel Works

Walter O. Amsler, furnace engineer, Pittsburg, has completed plans for the erection of a continuous heating furnace for the Seattle Steel Co., Seattle, Wash., which is making extensive improvements to its plant.

The American Sheet & Tin Plate Co. has awarded a contract to the Raymond Concrete Pile Co. for the concrete piling, footings and retaining walls to be used in connection with the erection of two additional buildings at the Laughlin plant, Martins Ferry, O. One of the structures will be 200 x 50 feet and the other 130 x 50 feet.

New Works

The Riverside Bridge Co., Wheeling, W. Va., will increase the capacity of its plant.

The American Zinc, Lead & Smelting Co., Hillsboro, Ill., is planning some additions to its plant.

The American Locomotive Co. is erecting a brick and steel shop at Stanton and Beaver avenues, twenty-first ward, Pittsburg, to cost about $20,000.

The American Reduction Co., Pittsburg, is increasing the capacity of its plant at West Newton, Pa., and has awarded some contracts for the necessary equipment.

Richard C. Loos, 1017 Chestnut street, Delanco, N. J., has prepared plans for a three-story, concrete and steel factory building which will be erected at Delanco for A. Ridgeway & Son.

The Natural Cartonic Co., 135 Broadway, New York City, has bought two acres on Newark avenue, Elizabeth, N. J., and will erect an industrial plant there. When ready for operaton the plant will engage about 250 employes.

The Anglo-American Mill Co. is equipping a plant at Owensboro, Ky., for the manufacture of small flour mills. It has purchased a building which was already partly equipped, but will require additional machinery. The plant will have a capacity of 30 machines a month.

Bertsch & Co., Cambridge City, Ind., advise that they have decided to locate their new factory in that city. The company is in the market for two traveling cranes, but the details of the other necessary equipment, as well as of the new plant, have not yet been completed.

Plans have been completed by L. Rodman Nichols, architect, Schenectady, N. Y., for a one-story brick factory and boiler house. The building will be 60 x 149 feet, of brick and concrete, and will be erected by the Unit Brick Co., Schenectady.

Lees-Bradner Co., 1967 East Fifty-fifth street, Cleveland, manufacturer of gear cutters, is about to erect a new factory building, 150 x 50 feet, two stories, at 6210 Carnegie avenue, that city. It is expected that the new structure will be ready for operation in about two or three months.

The Singer Sewing Machine Co., 149 Broadway, New York City, will erect a large addition to its plant at First and Trumbull streets, Elizabeth, N. J. The new bulding will be used for general storage purposes. Its estimated cost is $50,000. Machinery requirements will include elevator equipment.

The Rector Gas Co., 131 West 131st street, New York City, has secured a three-year lease on property at Third avenue and Coate street, Elizabeth, N. J., and will erect a plant on it. The company will begin work at an early date, and will employ over 100 men when the plant is put in operation.

The Critchley Machine Screw Co., Worcester, Mass., advises that it is now working on plans for a one-story brick factory building, 300 x 50 feet. The new structure will be used for consolidating the two present plants of the company. All machinery is to be driven by electricity furnished by a local power company.

Lee & Hewitt, architects, 1123 Broadway, New York City, have filed plans

for a large factory building which will be erected on Tenth avenue between Thirty-first and Thirty-second streets. The structure will be 74 x 100 feet, and nine stories high, and will cost about $150,000. F. G. Burke, 552 West Thirty-sixth street, is the owner.

Thomas A. Edison, West Orange, N. J., has bought the licorice works at Silver Lake, Newark, N. J., and will erect two new plants there. One factory will be used for manufacturing storage battery cans of the type that Mr. Edison has been extensively experimenting with on the Erie railroad, and at the other, storage battery automobiles will be manufactured. It is reported that work on the new plants will be started some time this summer.

Plans have been completed by the Heppenstall Forge & Knife Co., Pittsburg, for an extension to its plant at Forty-seventh street, on the site formerly occupied by the Velte Foundry & Machine Co., which will include the erection of a forge shop and machine shop. The former will be equipped with steam hydraulic hammers and the machine shop will be equipped for the manufacture of axles, shafting and heavy forgings. The company is receiving bids on two 30-ton, four-motor, 50-foot span cranes for the forging shop and a 30-ton, three-motor, 48-foot span crane for the storage yard.

Power Plant Equipment

The Pacific Gas & Electric Co., Chico, Cal., will spend $100,000 on improvements.

The Nevada Power & Transportation Co. will erect a power plant on the Truckee river near Vista, Nev.

The Atlantic Refining Co., Pittsburg, is taking bids on four 200-horsepower return-tubular boilers.

The Santa Barbara Gas & Electric Co., Santa Barbara, Cal., will expend $400,000 in extensions and improvements.

Electric motors will be required by Harcourt & Co., engravers, Louisville, Ky., who are remodeling a building which they will occupy about Aug. 1.

Power equipment will be required in the near future by the Standard Laundry Co., Louisville, Ky., which is contemplating the erection of a new plant.

Bids will be received at the office of John T. Hume, southern branch, N. H. D. V. S., National Soldiers' Home, Va., for installing electrically driven sewage pumps.

The McLaughlin Engineering Co., Kansas City, Mo., will have plans completed in about 30 days for the proposed municipal electric lighting plant. The appropriation is $350,000.

The Philadelphia Electric Co. will erect an addition to its plant at Twenty-sixth and Christian streets, that city. The estimated cost of the improvement is $50,000.

A compressed air plant will be installed in the coal mine of the Brush Creek Mining & Mfg. Co., at Barbourville, Ky. The concern plans to spend $40,000 in improvements.

The Northwestern Pennsylvania Railway Co., Meadville, Pa., will purchase one 300-kilowatt rotary converter and one 300-kilowatt motor generator set. C. L. Murray is general manager.

The St. Mary and Elizabeth's hospital, Louisville, Ky., is building a new power-house and will install equipment, the exact capacity of which has not been decided on.

The Springfield Railway & Light Co., Springfield, Mo., has issued bonds to the amount of $300,000, to be used for extensions and improvements, including the purchase of a turbine generating set, etc.

A power house is in course of erection near Madisonville, Ky., by the Coil Coal Co., of which W. D. Coil is general manager. Conveying machinery for the tipple will also be required.

The American Rotary Valve Co., Chicago, announces that it will spend about $100,000 at once in improving the Anderson, Ind., plant of the Jenney Electric Co., recently taken over by the former company.

The Beaver Valley Electric Light Co., which has taken over the plant of the Waynesburg Electric Light & Power Co., Waynesburg, Pa., is preparing plans for improvements to this property.

The Memphis, Tenn., Warehouse Co. will spend $500,000 in the enlargement of its cotton compress, and will erect a new plant, which will require the installation of a large amount of power equipment.

A 50-horsepower boiler will be installed in the plant of the Pearl Laundry Co., Louisville, Ky. Louis B. Glass, proprietor of the plant, is contemplating the erection of an entirely new boiler-house.

The Gerdes distilling plants at Nicholasville, Ky., which discontinued operations for the summer a short time ago, are being reconstructed. A new power plant is to be installed. The offices of the company are in Cincinnati.

Power plants of the Athens Electric Railway, of Athens, Ga., are to be considerably enlarged, according to announcement which has been made by the company. One is to be increased from 1,000 horsepower to 1,200 horsepower.

The Loomis & Hart Mfg. Co., Chattanooga, Tenn., is in the market for power equipment for its planing mill and furniture factory, which was destroyed by fire last week. The boiler room was one of the sections of the plant which was most badly damaged.

The Louisville Galt House Co. has been organized to take over the Galt House in Louisville, Ky., and will make a number of improvements, including the installation of a new power plant. Two electric elevators will also be contracted for. The proposed expenditures will total $50,000.

It has been announced that the recently reorganized Alexandria Electric Co., Washington, D. C., which is now chartered as the Alexandria County Lighting Co., will spend about $50,000 at once for additional machinery. George E. Warfield, cashier of the First National Bank, Washington, is president.

Plans have been filed for a one-story brick power-house, to be erected at St. Joseph's Institute on Ferry Point road near 177th street, New York. Jaunita I. O'Hara, 236 East Fifteenth street, is president, and Joseph H. McGuire, 45 East Forty-second street, is architect. The estimated cost is $25,000.

The poor board of Allegheny county, Pa., has rejected bids for the erection and equipment of a power plant at Woodville, Pa., and will make some changes in the original plans. The equipment includes four boilers, a four-valve engine, direct-connected to a 150-kilowatt generator and the necessary pumps.

The High Grade Oil Refining Co. has awarded a contract for the buildings to be erected in connection with a new refinery to be built in Butler county, Pa. The buildings will be erected by the Hammond Iron Co., Warren, Pa. All contracts for machinery and the equipment for the power plant have not been awarded.

The Power Engineering Co., Minneapolis, has plans in progress for remodeling the electric light plant at Spooner, Wis. The head will be raised three feet and the system converted from single-phase, 60-cycle, to three-phase, 60-cycle. New generators, switchboard, etc., have been ordered and the old water wheels will be used.

Plans are being prepared by Andrew McMasters, architect, Pittsburg,

for a group of seven buildings to be used as a hospital for the insane, in Westmoreland county, Pa. The buildings will cover an area, 200 x 540 feet, and will include a power plant and possibly a water works to provide for the requirements of the institution.

The Louisville Railway Co., Louisville, Ky., it is reported, will enlarge the capacity of its power house, some new equipment having been recently purchased. It is marketing $750,000 worth of bonds, and it is understood that the proceeds of this sale will be used to some extent in the purchase of additional machinery for the power plant.

The Mahoning & Shenango Railways & Light Co. is making extensive improvements at its North avenue power house, Youngstown, O., which will include the erection of a one-story brick addition containing over 1,500 square feet of floor space. The new equipment includes a 4,000 kilowatt turbine, a 12,000-square foot surface condenser, a 200-horsepower pump and two 500-horsepower boilers, in addition to the boiler feed pumps and various other necessary auxiliaries.

The Consolidation Coal Co., Baltimore, is considering the establishment of an electric light and water works plant at Jenkins, Ky., a town which it is building in eastern Kentucky as a base for its coal mining operations. The Nicola Building Co., Pittsburg, has the contract for the erection of the buildings, and is purchasing equipment for sawmills, planing mills and blacksmith shops which will be used in putting up the structures. Several hundred thousand dollars will be spent in the construction of the town, which will consist of 1,000 buildings of various kinds.

Miscellaneous

The Walnut Creek Water Co. has been organized at Walnut Creek, Cal., and will install a plant at once.

The American Sugar Refining Co. has placed contracts for the construction of a new boiler and pump house at its plant in Brooklyn.

W. E. Miller, engineer of the Wisconsin railway commission, recommends that an additional pump be installed in the plant of the Racine Water Co., Racine, Wis.

The Etna Water Co., Etna, Pa., has awarded a contract to the Erie City Iron Works, Erie, Pa., for the installation of three 220-horsepower water tube boilers.

J. R. Jetton and Henry King have purchased the control of the Murfreesboro Water Co., Murfreesboro, Tenn., and are contemplating a number of improvements.

Gladding, McBean Co., San Francisco, will erect a steel building and narrow gage railroad at its pottery plant at Sheridan, Cal. An eight-ton locomotive is among the requirements.

Contracts have been placed with the Otis Elevator Co. by the city of New York for furnishing 33 elevators for the new municipal building in the metropolis. The successful bid was $582,000.

The American Locomotive Co. is installing three 300-horsepower Wickes boilers to be operated by Detroit automatic stokers in the new power plant at the company's Northside, Pittsburg, works.

Freight and passenger elevators will be installed in the old post office building, Third and Green streets, Louisville, Ky., by the Courier-Journal Co., which is remodeling the structure for newspaper use.

Announcement has been made that the refinery of the California-Fresno Oil Co., at Fresno, Cal., which was destroyed by fire recently, will be rebuilt at once on a larger and more modern scale than before. A. Ruskaupt is president of the company.

The New York, New Haven & Hartford railroad has just placed contracts for the construction of a new power house at Cos Cob, Conn., with the Berlin Construction Co. The Boston Elevated railroad has also made awards for the building of an additional power house in Boston.

The Wells-Jones Plow Co., Jackson, Tenn., advises that it is at present taking figures on the following wood-working machinery: One pony planer; one automatic turning lathe for plow rounds; one No. 2 or No. 3 bandsaw; one variety woodworker; one two or three spindle boring machine; one buzz planer and one swing cut-off saw.

The Canadian Northern railway has awarded contracts for the construction of a grade through the Rocky mountains from Hope to Kamloops, a distance of 160 miles. The Northern Construction Co., Winnipeg, and P. Welsh, a member of the firm of Foley, Welsh & Stewart, Spokane, are the contractors. An enormous amount of rock work will be done.

The Aluminum Co. of America is making improvements at its New Kensington, Pa., plant and has awarded a contract to the Hoover, Owens & Rentschler Co., Hamilton, O., through its Pittsburg representative, for the installation of a Hamilton Corliss crank and fly wheel engine connected tandem to two steel constructed outside packed pumps. The pumps have a capacity of 110,220 gallon per minute.

An order has been placed with the Harris Pump Co., Pittsburg, by the Mississippi Valley Bridge & Iron Co., Leavenworth, Kan., for pumping equipment for dredge boats to be used in the construction of a lock and dam in the Ohio river at Woodland, W. Va. The contract includes two boiler feed pumps, one 10-inch Morris centrifugal sand dredging pump, two 12-inch Morris centrifugal belt driven pumps and one 15-inch Morris centrifugal rope driven pump.

Government News

The bureau of supplies and accounts, navy department, Washington, D. C., will open bids July 25, for furnishing the following material for delivery at naval stations as indicated, and more fully described in the schedules enumerated:

Hoist and blocks, chain, miscellaneous, Brooklyn, 3755.
Steelwork, miscellaneous, Boston, 3758.
Pumps, torpedo test, 50, Newport, 3759.
Solder, electricians, 900 pounds, Boston, 3756.
Steel, plate, black, 11,500 pounds, Charleston, 3763.
Steel, angles, 72,000 pounds, Charleston, 3763.
Tubing, brass, voice, miscellaneous, Portsmouth, 3754.
Bolts and nuts, steel, miscellaneous, Brooklyn, 3755.
Drills, twist, miscellaneous, Boston, 3755.
Nuts, brass, 1,340 pounds, Boston, 3755.
Sets, machinists', 25, Brooklyn, 3755.
Tools, hand, miscellaneous, Boston, 3755.
Pipe, brass, miscellaneous, Brooklyn, 3756.
Pipe, brass, 5,000 pounds, Portsmouth, 3756.
Pipe, wrought iron and steel, miscellaneous, Brooklyn, 3763.
Opening of Aug. 1.:
Cars, freight, platform, dump, 7, Portsmouth, 3766.
Press, forging, 1, Brooklyn, 3751.

In the course of a few days bids will be called for by the Isthmian Canal Commission, Washington, D. C., under circular 639, for furnishing the material for four intake buildings and bridges. These bridges will contain about 690,000 pounds of structural steel.

Light House Supplies.

AIR COMPRESSOR — Bids were opened by the inspector of the Eighteenth Light House District, San Francisco, for furnishing one air compressor for the Yerba Buena Light House Depot, Cal., as follows:

Eccles & Smith, $545 and $510; Joshua Hendy Iron Works, $560; Berger & Carter Co., $587; Geo. E. Dow Pump & Engine Co., $525; Fairbanks-Morse Co., $456; Harron, Rickard & McCone, $534; accepted.

Bids were opened by the inspector of the Eighteenth Light House District, San Francisco, for furnishing one milling machine and one set of tools for the machine shop at Yerba Buena Light House Depot, Cal., as follows:

Item. 1, milling machine; 2, tools for machine shop: Eccles & Smith, Item 1, $930; 2, $40; Pacific Tool & Supply Co., Item 1, $945 and $995; 2, $36; The Compressed Air Machinery Co., Item 1, $867; 2, $28; C. W. Marwedel, Item 1, $950; 2, $40; J. L. Hicks, Item 1, $863; Harron, Rickard & McCone, Item 1, $943, $993, $1,309 and $1,359; Manning, Maxwell & Moore, Item 1, $960 and $1.114; 2, $37 and $60; Rix Compressed Air Drill Co., Item 1, $990; 2, $65.

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers

The following manufacturing companies have filed articles of incorporation:

The Knoxville Machine Tool Co., Knoxville, Tenn.; $25,000; by John P. Staub, John W. Cruze and others.

The Morris Cash Register Co., Portland, Me.; $500,000; by Joshua B. Holden, Billerca, Mass., and others.

St. Louis Cash Register Co., St. Louis; $500,000; by A. H. Fischer, R. M. Quackenbos, and Leo Rasteur Jr.

The Modern Electric & Mfg. Co., Ltd., Ottawa; $40,000; by Archibald L. Foster, Levi W. Whitney, and William F. Garland.

The F. L. Estes Co., Nashville, Tenn.; $9,000; to deal in machinery and machine tools; by F. L. Estes, W. H. Estes and L. Hewlett.

The Art Brass & Plating Works, Louisville, Ky.; $10,000; to manufacture brass products; by Louis Rindt, W. L. Heady and others.

The Northern Ontario Engineering Works, Ltd.; Cobalt, Ont.; $40,000; by Fred Browne, Gordon Browne, Thomas Shuttleworth and others.

The Indianapolis Gas Engine Co., Indianapolis; $10,000; by Thomas Strack, W. P. Best, H. A. Noffke, Ray Carmichael and B. N. Lay.

The Arthur Machine Co., Richwood, O.; gasoline engines; $20,000; by Geo. Y. Arthur, Carl E. Zieg, Edward J. Tobey, Henry J. Brooks and M. W. Arthur.

The Novelty Tool Co., North Vernon, Ind.; to manufacture tools; $10,000; by H. H. Dowd, F. X. Gettwallis, Harry Hicks, W. J. Hare and J. W. Linkhart.

The Radio Mfg. Co., Columbus, O.; patented machinery; $50,000; by E. W. Brinker, J. C. Spangler, John H. Carpenter, Howard Lewis and Chester C. Moelchert.

The Henson Mfg. Co., Springfield, Mass.; patented railroad lantern; $10,000; by O. R. Henson, T. E. Underwood, C. C. Florida, E. B. Taylor and W. C. Humpton.

The Calculator Sales & System Co., New York City; to deal in calculating machines, etc.; $200,000; by W. A. Walker, 330 Wisconsin street, Racine, Wis., and Philip Kleeberg.

The Diamond Iron Works, Leighton, Pa.; $30,000; by Howard L. Arner, Weissport, Pa.; George E. Gray, U. G. Smith, Charles G. Moll, Oscar J. Saeger and Henry Kresge, all of Leighton, Pa.

The Phoenix Die Casting Co., Buffalo; to manufacture and deal in dies, die castings, etc.; $15,000; by Henry H. Bechter, 326 Hudson street, Buffalo, N. Y.; James H. Smith, 3 Wieting block, Syracuse, N. Y.

Richard H. Thomas, Inc., New York City; gas engines, mill supplies, etc.; $12,000; by J. M. Shellabarger, 30 Church street, Charles B. Walker, 176 Centre street, and E. M. Hardy, 30 Church street, all of New York City.

The General Motors Export Co., New York City; to take over the foreign business of the General Motors Co.; by President Thomas Neal; first vice president, Gleason Murphy; vice president and general manager, C. B. Bennett.

The J. H. Tredise Co., New York City; to manufacture machinery for the manufacture of clothing; $100,000; by Josias H. Tredise, 583 Riverside drive; Robert W. Bernard, 814 West End avenue; Edward Vanderburgh, 512 West 136th street, all of New York City.

Staley Electric Elevator & Machine Co., New York City; to manufacture elevators and hoisting apparatus, etc.; $20,000; by Marcellus Staley, 245 Bay Tenth street, Brooklyn; Judson J. Staley, 1838 North Twenty-second street, Philadelphia; Herman Moskowith, 1748 Park avenue, New York City.

The Bergen Construction Co., Brooklyn, N. Y.; general contracting, structural iron and steel work; $10,000; by Matthew W. Wood, 416 Seventy-fourth street, Brooklyn, N. Y.; Max J. Finkelstein, 11 West Eighty-eighth street, New York City; Michael J. Walsh, 205 West 109th street, New York City.

The Chelsea Iron Works, Manhattan, New York City; $10,000; to manufacture machinery, etc., manufacture and deal in builders' and mill supplies, etc.; by Robert J. Wright, 318 West 116th street; Thomas S. Ferguson, 301 West 114th street, and George Wright, 318 West 116th street, all of New York City.

New Construction

The Thompson-Starrett Co. has increase its capital stock from $1,500,000 to $2,000,000.

The Sacramento Wire Mattress Co. will build a factory and install machinery at Sacramento, Cal.

The McClintic-Marshall Construction Co., Pittsburg, was awarded the contract for the building of the 500-ton sugar mill of the Angola state prison farm by the Louisiana state board of control last week. The plant will cost $50,000.

The American Foundry & Construction Co., Pittsburg, has practically completed the erection of an addition to its plant at Hazlewood. The building is a two-story structure, about 50 x 200 feet. It is of steel, brick and concrete construction and will be used for storage purposes, with a pattern storage department on the second floor.

The Washington Tin Plate Co., Washington, Pa., which recently awarded contracts for rebuilding its plant at Washington, has authorized a further extension to provide for additional annealing capacity. The general contract for the structural steel work has been placed with the Riter-Conley Mfg. Co. Samuel Diescher & Sons, Pittsburg, are consulting engineers for the company.

The Critchley Machine Screw Co., manufacturer of special screw machine work, Worcester, Mass., advises that it is now working on plans for a one-story brick factory building, 300 x 50 feet. The company at present is operating two separate plants and intends to consolidate them on the completion of the new building. All machinery will be driven by electricity furnished by a local power company.

The Cleveland Electric & Machine Mfg. Co., Cleveland, recently incorporated, will locate in the Guggenheim building, near East Ninth street and

Bolivar road, that city, to manufacture meat chopping and grinding machinery. It is in need of a power plant, lathes, trip hammers, heating furnaces, pulleys, hangers, etc. The incorporators are: Ben. Fauld, August Bender, A. Mannhardt, S. J. Schwenger and Adolph S. Klein.

The Standard Underground Cable Co., of Pittsburg, Pa., has decided to establish a Canadian branch at Hamilton, at a cost of about $500,000. A site has been secured with a frontage of 400 feet on Sherman avenue, in the manufacturing district. The first set of buildings will comprise a three-story brick and structural iron building 64 x 335 feet, one-story saw-tooth building 60 x 224 feet, one-story saw-tooth building 60 x 250 feet, and two other one-story buildings 64 x 90 feet, and 30 x 70 feet, respectively, and an office building. These will be of the latest type of factory construction, designed by Prack & Perrine, who will have the supervision of the construction work. The contract for the first building has been let to David Dick & Sons, of Welland, and will run over $100,000, the work to be commenced immediately. The structural material will be supplied by the Hamilton Bridge Work Co. The Standard Cable Co. will employ about 300 men at the start, and when fully equipped the number will be increased to 500.

General Industrial

The Marmet Coal Co., of Cincinnati, has increased its capital stock from $500,000 to $1,500,000.

The Hall Gas Engine Mfg. Co., Waukegan, Ill., has decreased its number of directors from seven to five.

The W. E. Wood Construction Co., Detroit, has taken the contract for 600 tons of structural steel for the Ford Motor Co.'s proposed new factory.

A receiver for the Superior Machine Works, Chicago, has been asked for by the heirs of the late George Frederick Burkhart, who owned the majority of the stock.

The tools and equipment of the Dilley Foundry Co., which had maintained a plant at Pine Bluff, Ark., for 25 years, has been sold to E. English, master mechanic of the Cotton Belt shops there.

The Beaver Dam Mfg. Co., of Beaver Dam, Wis., has increased its capital stock from $100,000 to $200,000 for the purposes of extensions and enlargement of the business. B. C. Inman is secretary.

The Vulcan Mfg. Co., of Fond du Lac, Wis., recently incorporated and established in the former blast furnace and foundry plant in that city, is compelled to operate occasional night shifts to cope with orders.

In regard to the fire which recently damaged the plant of the Wells-Jones Plow Co., Jackson, Tenn., that company advises that its board of directors has not yet completed arrangements regarding the resumption of business.

The Kelley Boiler Co., Wellsville, O., whose incorporation was noted some days ago, advises that it takes the place of a former partnership, now dissolved, in the sale and installation of hot water and steam heating systems. No additional equipment will be required at present.

The Tennessee Coal, Iron & R. R. Co. has placed an order with the General Electric Co. for four 18-ton locomotives. These will be 220 volt, three-phase, 25-cycle locomotives and their service will consist chiefly of switching and placing cars in and about the company's plant at Corey, Ala.

At the annual meeting of the Consolidated Car Heating Co., June 12, in New York, Cornell S. Hawley, formerly vice president, general manager and treasurer, was elected president and treasurer. C. C. Nuckols, formerly superintendent and purchasing agent, was elected general manager.

The Canadian Manufacturer Publishing Co., Ltd., Toronto, has issued the first number of The Iron Trade Journal, formerly known as The Dominion Foundryman. The new journal will be devoted to the basic iron and steel, foundry, metal working and machinery industries in Canada. It will be edited by W. L. Edmonds, J. C. Armer and Gordon C. Keith.

At the recent meeting of the Burden Iron Co., Troy, N. Y., Daniel W. Tallcott was chosen to the board of trustees, the others being Arthur S. Burden, I. Townsend Burden, John H. Hammond, Mary I. Burden, William P. Burden, James A. Burden, I. Townsend Burden Jr. and Veryl Preston. The trustees organized by electing these officers: President, James A. Burden; vice president, William P. Burden; manager, Daniel W. Tallcott Jr.; secretary and treasurer, Robert Forrest; assistant manager, William E. Millhouse.

The Marion superior court of this city has approved the sale of the Jenney Electric Co., at Anderson, to the American Rotary Valve Co., of Chicago. The consideration is $135,000, the amount of the only bid received by the receiver, the Security Trust Co., of this city. Austin H. Hart, secretary and general manager of the new owner, says the American Rotary Valve Co.'s plants at Niles, Cal., and also its plant in southern Illinois will be closed and the work turned out at Anderson. About $100,000 is to be spent at once in improving the Anderson plant, and within a few months approximately 500 mechanics will be employed.

John L. Ketcham, secretary and treasurer of the Brown-Ketcham Iron Works, which is being operated by Frank D. Stalnaker, receiver, has filed a statement of the company's assets and liabilities with the federal court, showing assets $1,022,630.04 and liabilities $520,207.43. The Lackawanna Steel Co. is the largest single creditor, with an account of $126,150.35. To about 15 banks is due the sum of $190,000. Secured claims, secured by liens, amount to $154,693.43. Unsecured claims aggregate $274,293. Real estate owned by the company is valued at $191,707.21, the Indianapolis plant being valued at $121,352.20. Macinery and tools at Indianapolis and Huff, Pa., are valued at $372,750.50. Open accounts due the company amount to $317,455.71, and deposits of money are $34,095.80, in addition to which is cash on hand and not deposited when recent involuntary bankruptcy proceedings were started, amounting to $589.91. Material and merchandise on hand is estimated at $81,368.02 and patterns and flasks at $13,095.55.

Trade Notes

The Pawling & Harnischfeger Co., Milwaukee, announces the opening of a branch office at 533 Baronne street, New Orleans, under the management of T. W. Waddell.

The General Supply Co., with head offices at Ottawa, has added to its list of agencies, the London Machine Tool Co., Hamilton, Ont., manufacturers of machine tools.

The Homestead Valve Mfg. Co., Pittsburg, announces that it has appointed as agents in Scranton, Pa., and vicinity, Charles B. Scott & Co., 119 Franklin avenue, that city. The latter company will carry a large stock of Homestead valves.

Fires

A machine shop of the G. Mathes Iron & Metal Co., St. Louis, was damaged by fire to the extent of $1,000 on June 22. The fire originated from a spark of a passing locomotive.